2001

Cardiovascular Disease: Mortality, Morbidity and Risk Factors Among Residents of the Illawarra Health Area

Victoria J. Westley-Wise
University of Wollongong, victoria@uow.edu.au

Sarah Thackway
NSW Department of Health, sarah.thackway@moh.health.nsw.gov.au

Publication Details

V. Westley-Wise & S. Thackway, Cardiovascular Disease: Mortality, Morbidity and Risk Factors Among Residents of the Illawarra Health Area (Illawarra Health, 2001).

Cardiovascular Disease: Mortality, Morbidity and Risk Factors Among Residents of the Illawarra Health Area

Abstract
This issue of The Illawarra Population Health Profiler focuses on cardiovascular disease. Cardiovascular disease (CVD) is the most common cause of death, and second commonest cause of hospitalisation among both males and females in the Illawarra Health Area. Coronary heart disease (causing angina and acute myocardial infarction) and stroke are the major forms of CVD causing death and illness. The report provides information across the spectrum from risk factors through to the burden of disease, measured by excess hospital separations and mortality. The focus is on coronary heart disease (CHD) and stroke. Data are reported at the Illawarra Health Area, and each of its Local Government Areas (LGAs). The relative impact of the condition in the population is compared to the NSW average.

Keywords
cardiovascular, morbidity, disease:, risk, health, factors, among, mortality, residents, illawarra, area

Publication Details
V. Westley-Wise & S. Thackway, Cardiovascular Disease: Mortality, Morbidity and Risk Factors Among Residents of the Illawarra Health Area (Illawarra Health, 2001).

The Illawarra Population Health Profiler

Division of Population Health & Planning
Illawarra Area Health Service

Issue 2, October 2001

CARDIOVASCULAR DISEASE
Mortality, Morbidity and Risk Factors Among Residents of the Illawarra Health Area

Contents

This issue of *The Illawarra Population Health Profiler* focuses on cardiovascular disease.

Cardiovascular disease (CVD) is the most common cause of death, and second commonest cause of hospitalisation among both males and females in the Illawarra Health Area. Coronary heart disease (causing angina and acute myocardial infarction) and stroke are the major forms of CVD causing death and illness.

The report provides information across the spectrum from risk factors through to the burden of disease, measured by excess hospital separations and mortality. The focus is on coronary heart disease (CHD) and stroke. Data are reported at the Illawarra Health Area, and each of its Local Government Areas (LGAs). The relative impact of the condition in the population is compared to the NSW average.

Methods

Data for this profile were obtained from: *NSW Inpatients Statistics Collection, NSW Health Surveys, NSW Midwives Data Collection;* and the Australian Bureau of Statistics' *Death Registrations* (from the Registry of Births, Deaths and Marriages) and *Estimated Resident Populations.*

The hospital separation, mortality, population and perinatal data were accessed and analysed through NSW Health's *Health Outcomes and Information Statistical Toolkit* (HOIST), using the Statistical Analysis System (SAS, Version 6.12).

The survey data were accessed from NSW Health's on-line *NSW Health Survey* report.[1]

Standardised Separation Ratios (SSR), and **Standardised Mortality Ratios** (SMR), have been used to compare the study population (e.g. residents of the whole Illawarra Health Area or Wollongong LGA or sub-areas within Wollongong LGA), with the total NSW population. While SSRs allow comparisons to the total NSW population they do not allow direct comparisons within the Illawarra, eg, using this measure to compare male and females in the Illawarra Health Area (see direct age standardized rates below). The SSRs have been calculated for the two-year period 1997/98 and 1998/99. The SMRs cover the five-year period 1994-1998.

A SSR (or SMR) of 1.0 indicates that the rate for the study population equals the NSW rate, after taking into account differences in age structures of the populations (by indirect age-standardisation). A SSR (or SMR) of 2.0 indicates a rate for the study population double (or 100% higher than), and a SSR (or SMR) of 0.5 indicates a rate half (or 50% lower than), that of the NSW population. Arrows in the tables indicate whether any differences between the study and NSW populations are statistically significant at the 5% level.

`Excess Separations'** and **`Excess deaths' represent the number of hospital separations or deaths that occurred above (+) or below (-) the numbers expected based on the NSW average. **Age-specific rates** for both males and females are shown to demonstrate which age/ sex groups are at highest risk.

In addition, **directly age-standardised rates** by sex and LGA are reported. These direct standardisations used the 1991 Australian population as the standard. In contrast to the (indirectly age-standardised) SSRs, directly age-standardised rates can be directly compared between each other, e.g. males with females, Kiama with Wollongong LGA, the Unanderra sub-area with the Warrawong sub-area). Directly age-standardised rates also allow a comparison over time, so **trends** over the last decade are shown. Where comparable trend data have been published for NSW residents, these are also shown.[2]

In addition responses related to cardiovascular disease risk factors among Illawarra residents aged 16 years and over who responded to the 1997 and 1998 *NSW Health Surveys*[1] are summarised in this report. The *NSW Health Surveys* in 1997 and 1998 included questions which explored the **prevalence, detection and management** of a range of **risk factors**. These included smoking, physical inactivity, nutrition, overweight and obesity, hypertension, elevated blood cholesterol and diabetes.

While only limited information on diabetes prevalence is reported here, readers are referred to issue 1 of the *Profiler* that is devoted to diabetes, including its management and outcomes.

Estimates derived from the *NSW Health Survey* are based on responses from 2,060 Illawarra residents (1,026 in 1997 and 1,034 in 1998.) These estimates are compared with those for NSW residents (based on 35,025 respondents). Again, any differences between the Illawarra and NSW populations are reported as statistically significant at the 5% level. In addition, for some indicators, age-specific prevalence rates, for Illawarra males and females, are reported. Trends for risk factors are reported where comparable risk factor data are available for both Illawarra and NSW residents over the last decade.

The *NSW Midwives Data Collection* for 1996-1999 provided data about smoking prevalence (among women during pregnancy) at the small area level (LGA, and smaller postcode groupings within the Wollongong LGA).

Some Data Limitations

Readers should note that hospital separation data do not give an accurate picture of the incidence of CHD and stroke, for a number of reasons, including that they exclude those who die prior to admission, count episodes rather than individual people, include elective admissions for diagnostic or revascularisation procedures, and because admission practices vary between hospitals.

The *NSW Health Survey* data also have their own limitations, including that they are based on self-report. Some of the survey estimates are based on small numbers of respondents, particularly when estimates for sub-groups are reported separately (e.g. age/sex-specific rates). Small numbers mean imprecise estimates; they may also mean that there is insufficient power to detect a statistically significant difference (if an underlying difference really does exist).

Unfortunately numbers of respondents to the *NSW Health Survey* at the Area level are too small to give meaningful estimates for sociodemographic sub-groups resident within individual Areas, for example, defined by LGA of residence, indigenous status, country of birth, and level of socioeconomic disadvantage. Readers, however, are referred to the on-line report of the *NSW Health Surveys* 1997-1998 for estimates related to such sub-groups at the NSW level.[1] In addition, the *NSW Health Surveys* in 1997 and 1998 were limited to adults aged 16 years and over. To fill the gap for Illawarra youth, readers are referred to the report of the 1996 *Illawarra Youth Heath Survey* (IYHS), available from the Division of Population Health and Planning, which includes detailed information about risk factors among young people resident in the Illawarra.[3]

The *NSW Midwives Data Collection* was accessed to provide data about smoking prevalence during pregnancy at the LGA level, and, for the Wollongong LGA (which has a large population), at the level of smaller geographic areas, based on postcodes and postcode groupings.

Overview

Coronary Heart Disease

- In 1994-1998, coronary heart disease (CHD) accounted for 60% (3,261) of CVD deaths and 27% of total deaths among Illawarra residents. In 1997/98-1998/99, CHD accounted for 42% (7,904) of CVD hospitalisations and 3.7% of total hospitalisations. Males were at nearly double the risk of CHD death, and more than twice as likely to be hospitalised for CHD, than females.

- Compared to NSW, CHD mortality rates in the Illawarra were **18% higher** for males and **11% higher** for females, both significant excesses. The high rates equate on an annual basis to **85 excess deaths**, including 47 excess premature deaths among people aged 25-74 years. CHD mortality rates were highest among Shellharbour LGA residents. Mortality rates were significantly higher than the NSW average among Shellharbour and Wollongong LGA males and females, and Shoalhaven LGA males.

- Similarly, CHD hospitalisation rates among Illawarra residents were **20% higher** than the NSW average among males and **14% higher** among females, both significant excesses. The high rates equate on an annual basis to **589 excess hospitalisations**. CHD hospitalisation rates were significantly higher than the NSW average among Shellharbour and Shoalhaven males and females, and Wollongong males.

- Over the last decade CHD **mortality** rates **decreased** considerably, while CHD **hospitalisation** rates **increased** (at least in the early to mid-1990s). This increase largely reflects increasing rates of coronary revascularisation procedures, while hospitalisations for acute myocardial infarction have actually declined.

Stroke

- In 1994-1998, stroke accounted for 22% (1,227) of CVD deaths and 10% of total deaths among Illawarra residents. In 1997/98-1998/99, stroke accounted for 12% (2,316) of CVD hospitalisations and 1.1% of total hospitalisations. Males were at a higher risk of stroke death, and particularly hospitalisation, than females; however these differences were minor relative to the CHD gender differences.

- Compared to NSW, stroke **mortality** rates in the Illawarra were **average** for males and

females. However stroke mortality rates were significantly higher than the NSW average among Wollongong males (and lower than the NSW average among Shellharbour females).

- In contrast, stroke **hospitalisation** rates among Illawarra residents were **10% higher** than the NSW averages among males and **17% higher** among females, both significant excesses. These excesses equate on an annual basis to **134 excess hospitalisations**. Stroke hospitalisation rates were significantly higher than the NSW average among Wollongong males and females, and Shoalhaven females.

- Over the last decade stroke **mortality** rates in the Illawarra (and NSW) **decreased**, while stroke **hospitalisation** rates in the Illawarra (but not NSW) **increased** slightly.

Risk Factors

- CHD and stroke are largely preventable. Risk factors include smoking, physical inactivity, a high saturated fat diet, high blood pressure and cholesterol, diabetes mellitus, and overweight/ obesity.

- The current prevalence rates in the Illawarra of each of the risk factors assessed (by self-report) in the 1997 and *1998 NSW Health Surveys* were average for NSW, with a few notable exceptions:
  - **overweight or obesity** was **higher** among both males and females, the difference being significant for females, and overall (i.e. males and females combined);
  - **diabetes** was **higher**, the difference being significant for females; and
  - consumption of various **high fat foods**, particularly fried potato products, was higher (although the differences were not significant).

  On the other hand, compared to the NSW averages:

  - **adequate physical activity** was **higher** among both males and females (although the differences were not significant); and
  - consumption of recommended quantities of **fruit and vegetables** was **higher**, the difference being significant for vegetables (males, females, and overall).

- With regards to smoking, the most important preventable cause of death and disability in Australia:
  - current smoking prevalence in the Illawarra is average by NSW standards;
  - ex-smoker prevalence among Illawarra females is significantly higher than the NSW average;
  - however, compared to each of the other NSW Health Areas, the Illawarra has the highest proportion of male smokers with no intention to quit in the next 6 months.

- Prevalence rates of the following risk factors were higher among Illawarra males than females:
  - smoking (and no intention to quit, and exposure to smoke indoors at work);
  - overweight and obesity; and
  - high intake of high fat foods and low intake of low fat milk, fruit and vegetables.

  The prevalence of physical inactivity and diabetes were higher among Illawarra females than males.

Detailed Analysis

Cardiovascular Disease

- Circulatory disorders (or cardiovascular disease, CVD) are the most common cause of death, and second commonest disease cause of hospitalisation (following digestive system disorders), among both male and female residents of the Illawarra Health Area. Tables 1-2 and Figures 1-2 show major causes of death and hospitalisation for residents of the Illawarra Health Area. These are also shown for each Local Government Area in the Appendix.

- In 1994-1998 CVD accounted for 45% of all deaths (5,468 of 12,287) among Illawarra residents. CVD accounted for a slightly higher proportion of deaths among females (47%, 2,579 of 5,478) than males (42%, 2,889 of 6,809) (Table 1, Figures 1-2).

- In 1997/98-1998/99 CVD accounted for 8.7% of all hospitalisations (18,627 of 215,326) among Illawarra residents. CVD accounted for a higher proportion of hospitalisations among males (11%, 10,801 of 102,558) than females (6.9%, 7,826 of 112,768) (Table 2, Figures 3-4).

Coronary Heart Disease

- In 1994-1998, CHD as a primary diagnosis accounted for 60% (3,261) of **deaths** from circulatory disease, and 27% of total deaths. Of the 3,261 CHD deaths, 58% (1,880) were among males and 42% (1,381) among females (Table 3).

- In 1997/98-1998/99, CHD as a primary diagnosis accounted for 42% (7,904) of **hospitalisations** for circulatory disease and 3.7% of total hospitalisations. Of the 7,904 CHD hospitalisations, 67% (5,307) were among males and 33% (2,597) among females (Table 3).

Comparisons with NSW

- Compared to the NSW averages, in 1994-1998 CHD **mortality** rates in the Illawarra were **18% higher** for males and **11% higher** for females, both significant excesses. Premature CHD mortality rates (among people aged 25-74 years) were 19% higher for males and 24% higher for females than the NSW averages (Table 3).

- Similarly, in 1997/98-1998/99 CHD **hospitalisation** rates among Illawarra residents were **20% higher** than the NSW average among males and **14% higher** among females, both significant excesses (Table 3).

Excess Deaths and Hospitalisations

- These relatively high CHD rates among Illawarra residents equate, on an annual basis, to an average of **85 excess deaths** (57 for males and 28 for females), with 47 excess premature deaths among people aged 25-74 years (31 for males and 16 for females) (Tables 3-4 show the five year excess).

- The excess hospitalisation rates equate to **589 excess hospitalisations** on an annual basis (434 for males and 155 for females) (i.e. `excess' to the numbers expected based on the NSW averages) (Tables 3-4 show the five year excess).

Age and Sex Comparisons

- In 1994-1998 the CHD **mortality rate** (directly age-standardised) among Illawarra males was nearly double (88% higher than) the rate for females (228.1 as compared to 121.4 per 100,000 per annum) (Figure 5).

  Similarly in each of the Local Government Areas (LGAs), the CHD mortality rates were 60% (Kiama) to 107% (Shoalhaven) higher among males than females (Figure 5).

- In 1997/98 – 1998/99 the CHD **hospitalisation rate** (directly age-standardised) among Illawarra males was more than double (133% higher than) the rate for females (1,365.7 as compared to 585.7 per 100,000 per annum) (Figure 6).

  Similarly in each of the LGAs, CHD hospital separation rates were 131% (Shoalhaven) to 146% (Kiama) higher among males than females (Figure 6).

- CHD mortality and hospitalisation rates increase steeply with age, from about 30-40 years, particularly among males. Males are at about 2-3 times higher risk of death and hospitalisation in all age groups from 25 years (Figures 7-8).

Local Government Areas

- In 1994-1998, CHD **mortality** rates were highest in **Shellharbour LGA** for both **males** and **females**, and lowest in the Kiama LGA for males and Shoalhaven LGA for females (Figure 5).

  The CHD mortality rate among Shellharbour LGA males was significantly higher than among Kiama LGA males (Figure 5).

- CHD mortality rates among males were significantly higher than the NSW average in the Wollongong (20% higher), Shellharbour (37% higher), and Shoalhaven (14% higher) LGAs. Similar excesses in each of the LGAs were observed for males aged 25-74 years (Table 4).

  For females, CHD mortality rates were significantly higher than the NSW average in the Wollongong (14% higher), and Shellharbour (27% higher) LGAs. These excesses were even more marked for females aged 25-74 years (32% higher for Wollongong LGA females and 53% higher for Shellharbour LGA females) (Table 4).

- In 1997/98-1998/99 CHD **hospitalisation** rates were highest among **Shellharbour LGA males** and **Shoalhaven LGA females** and lowest among Kiama LGA males and females (Figure 6).

  CHD hospitalisation rates among both and females males resident in the Shellharbour and Shoalhaven LGAs were significantly higher than among residents of both the Wollongong and Kiama LGAs (Figure 6).

- CHD hospital separation rates among males were significantly higher than the NSW average in the Wollongong (12% higher), Shellharbour (35% higher) and Shoalhaven (30% higher) LGAs (Table 4).

  For females, CHD hospital separation rates were significantly higher than the NSW average in the Shellharbour (27% higher), and Shoalhaven (34% higher) LGAs (Table 4).

Sub-Areas within Wollongong LGA

- CHD **mortality** rates (all ages) among Wollongong LGA **males** were significantly higher than the NSW average in the **Corrimal** (26% higher), **Wollongong** (30% higher), and **Warrawong** (23% higher) sub-areas.

  For **females**, CHD **mortality** rates (all ages) were significantly higher than the NSW average in the **Corrimal** (30% higher), **Wollongong** (19% higher), and **Unanderra** (27% higher) sub-areas (Table 5).

- In the 25-74 years age group, CHD mortality rates among Wollongong LGA males were significantly higher than the NSW average in the Corrimal (29% higher), Wollongong (50% higher), and Warrawong (39% higher) sub-areas.

- CHD **hospitalisation** rates (all ages) among Wollongong LGA **males** were significantly higher than the NSW average in the **Corrimal** (30% higher), **Warrawong** (13% higher), and **Dapto** (41% higher) sub-areas.

  For **females**, CHD **hospitalisation** rates (all ages) were significantly higher than the NSW average in the **Dapto** sub-area (47% higher), and significantly lower than the NSW average in the **Thirroul** sub-area (15% lower) (Table 5).

Trends

- Over the decade from 1989 to 1998 the directly age-standardised CHD **mortality** rate among Illawarra residents of all ages **decreased** by 34% in males (312.9 to 205.7 per 100,000) and by 27% in females (151.7 to 110.1 per 100,000) (Figure 9).

  The decline in premature CHD mortality rates (among people aged 25-74 years) over the last decade has been even more marked: 39% in Illawarra males (253.7 to 154.1 per 100,000) and 43% in Illawarra females (96.4 to 55.0 per 100,000) (Figure 10).

The decline in risk of CHD death in the Illawarra parallels the trend in the rest of NSW[1] (Figures 9-10).

- The decline in CHD deaths over the last decade has been accompanied by an overall **increase** in CHD **hospitalisations**. Between 1989/90 and 1997/98 the directly age-standardised CHD hospital separation rate among Illawarra residents of all ages increased by 37% in males (949.5 to 1,304.8 per 100,000) and by 12% in females (483.7 to 542.5 per 100,000) (Figure 11).

  The increase, however, was actually confined to the early 1990s, rates peaking in 1994/95 for Illawarra males (1,642.7 per 100,000) and in 1993/94 for Illawarra females (678.1 per 100,000), and declining since. The mid-1990s peak in CHD hospitalisations among Illawarra residents is not really apparent in the rest of NSW[1] (Figure 11).

  Interestingly, prior to 1992/93 CHD hospitalisation rates among Illawarra residents were average for NSW (despite higher mortality rates), but have been consistently higher since (Figure 11).

- The recent increase in CHD hospitalisations among Illawarra residents (and the mid-1990s peak) are accounted for by an increase in non-infarct diagnoses (Figure 12). This is consistent with the NSW-wide trend to an increase in CHD hospitalisations (mainly due to an increase in non-infarct diagnoses, mainly unstable angina), while hospitalisations for acute myocardial infarction (AMI) have actually declined. The increase in non-infarct diagnoses reflects increasing rates of coronary revascularisation procedures, as well as changes in diagnostic and admission practices.[1]

  In the Illawarra AMI diagnoses have also declined over the last decade (Figure 12). The decline in AMI hospitalisations among Illawarra residents over the last few years appears to have been at a faster rate than in NSW as a whole. For example, while AMI hospitalisation rates were up to 36% higher among Illawarra than NSW residents (in 1992/93, 32% higher for males and 45% higher for females), in 1998/99 AMI diagnoses were only 8% higher among Illawarra residents (14% higher for males and 2% lower for females).[4]

Stroke

- In 1994-1998 stroke as a primary diagnosis accounted for 22% (1,227) of deaths due to circulatory disorders and 10% of total deaths. Of the 1,227 stroke deaths, 56% (686) were among females and 44% (541) among males (Table 3).

- In 1997/98-1998/99 stroke as a primary diagnosis accounted for 12% (2,316) of hospitalisations for circulatory disorders and 1.1% of all hospitalisations. Of the 2,316 stroke hospitalisations, 51% (1,192) were among males and 49% (1,124) among females (Table 3).

Comparisons with NSW

- In 1994-1998 stroke **mortality** rates among both Illawarra males and females were **average** for NSW (albeit 6% higher among Illawarra males, a non-significant difference) (Table 3).

- In contrast, in 1997/98-1998/99 stroke **hospitalisation** rates among Illawarra residents were **10% higher** than the NSW average among males and **17% higher** among females, both significant excesses (Table 3).

Excess Hospitalisations

- The relatively high stroke hospitalisation rates among Illawarra residents equate, on an annual basis, to an average of **134 excess hospitalisations** (53 for males and 81 for females) (i.e. `excess' to the numbers expected based on the NSW averages) (Tables 3, 6 show the five year excess).

Age and Sex Comparisons

- In 1994-1998 the stroke **mortality rate** (directly age-standardised) among Illawarra males was 19% higher than the rate for females (70.3 as compared to 58.9 per 100,000 per annum) (Figure 13).

  Similarly in each of the Local Government Areas (LGAs) the differences in risk of stroke death between males and females were quite small; stroke mortality rates were between 13% lower (Kiama) and 28% higher (Wollongong) among males than females (Figure 13).

- In 1997/98–1998/99 the stroke **hospitalisation rate** (directly age-standardised) among Illawarra males was 32% higher than the rate for females (320.2 as compared to 242.6 per 100,000 per annum) (Figure 14).

  Similarly in each of the Local Government Areas (LGAs), stroke hospitalisation rates were between 24% higher (Shoalhaven) and 56% higher (Kiama) among males than females (Figure 14).

- Stroke mortality and hospitalisation rates increase steeply with age, from about 50-60 years. While there are only minor differences in risk of stroke death between males and females, males are nearly twice as likely to be hospitalised for stroke in the age groups 55-64 and 65-74 years. Nevertheless, the gender differences in stroke rates, even for hospitalisations, are still minor relative to the large gender differences in CHD rates (Figures 15-16).

Local Government Areas

- In 1994-1998, stroke **mortality** rates (directly age-standardised) were highest among **Wollongong males** and **Kiama 0females** (followed closely by Wollongong females) and lowest among Shellharbour males and females (Figure 13).

  The stroke mortality rate among Wollongong females was significantly higher than among Shellharbour females. With this exception, differences between the LGAs in stroke mortality rates were not significant (Figure 13).

  Stroke mortality rates were significantly higher than the NSW average among Wollongong males (20% higher), and significantly lower than the NSW average among Shellharbour females (29% lower) (Table 5).

- In 1997/98-1998/99 stroke **hospitalization** rates were highest among **Wollongong males** and **Shoalhaven females**, and lowest among Kiama males and females. However differences between the LGAs in stroke hospitalisation rates were not significant (Figure 14).

  Stroke hospitalisation rates were significantly higher than the NSW average among Wollongong males (12% higher), Wollongong females (18% higher), and Shoalhaven females (26% higher) (Table 6).

Sub- Areas within Wollongong LGA

- Stroke **mortality** rates (all ages) among Wollongong LGA **males** were significantly higher than the NSW average in the **Dapto** (56% higher) sub-area.

  For females, stroke **mortality** rates (all ages) were significantly higher than the NSW average in the **Unanderra** sub-area (76% higher), and significantly lower in the **Warrawong** sub-area (33% lower) (Table 7).

- Stroke **hospitalisation** rates (all ages) among Wollongong LGA **males** were significantly higher than the NSW average in the **Corrimal** (42% higher), and **Dapto** (34% higher) sub-areas.

  For **females**, stroke **hospitalisation** rates (all ages) were significantly higher than the NSW average in the **Corrimal** (30% higher), **Dapto** (79% higher) and **Warrawong** (35% higher) sub-areas (Table 7).

Trends

- Over the decade from 1989 to 1998 the directly age-standardised stroke **mortality** rate among Illawarra residents of all ages **decreased** by 31% in males (84.2 to 57.7 per 100,000) and by 46% in females (84.1 to 45.2 per 100,000). This decline in stroke mortality has closely followed the NSW-wide trend[1] (Figure 17).
- While stroke death rates have declined considerably over the last decade, the directly age-standardised stroke **hospitalisation** rates among Illawarra residents have shown a gradual increase. Between 1989/90 and 1998/99 the rates **increased** by 15% in males (272.4 to 318.6 per 100,000), and by 25% in females (203.0 to 253.3 per 100,000). In contrast, NSW rates have remained fairly stable[1](Figure 18).

- With improvements in survival and an aging population, stroke is making an increasing contribution to the community burden of disability. Within 12 months of having a stroke, while a third of people die, another third develop a permanent disability.[1]

Risk Factors

- CHD and stroke are largely preventable. They share a number of risk factors, including: behavioural factors such as smoking, physical inactivity, a high saturated fat diet; and physiological factors such as high blood pressure and cholesterol, diabetes mellitus, and overweight/ obesity.[1]

Smoking

- Tobacco use (including passive smoking) is responsible for the greatest burden of premature death and disability of all behavioural risk factors.[1]

  In 1996 tobacco was responsible for an estimated 9.6% of the total disease burden in Australia (as measured in disability-adjusted life years (DALYS)). [5] Coronary heart disease, lung cancer and chronic obstructive pulmonary disease (COPD) together accounted for over 70% of the disease burden attributed to tobacco.[1]

- In 1997-1998 an estimated 24.2% of Illawarra residents (males: 28.3%, females: 20.0%) were **current smokers** (daily or occasional). These prevalence rates were **average** for NSW (persons: 23.9%, males: 26.7%, females: 21.2%), albeit slightly higher for men and slightly lower for women (Figures 19-20).

  Smoking rates were highest among young adults, peaking in the age group 25-34 years for both Illawarra males and females (males: 40.6%, females: 28.0%), and declining to less than 5% among people aged 75 years and over (Figure 22). (In contrast smoking prevalence among NSW females was highest in the youngest age group, 16-24 years[1]).

  Smoking prevalence was higher among males than females in all age groups (except from 65 years, after which smoking prevalence was similarly low among both males and females) (Figure 22).

- In 1997-1998 a further 29.9% of Illawarra males and 24.1% of Illawarra females reported that they were **ex-smokers**. These ex-smoker prevalence rates were higher than the NSW averages, being significantly **higher** for **Illawarra females** (24.1% versus 20.7%) (Figure 20).

- Over the last decade current smoking rates (among people aged 18 years and over) have apparently **declined** considerably among Illawarra females (from 32% in 1989/90 when the Illawarra was found to have the highest female smoking rate of all NSW Health Areas, to 20.5% in 1997-1998). The overall decline among Illawarra males has been less apparent (from 31% in 1989/90 to 28.5% in 1997-1998) (Figure 23).[1,6-7]

- Of current smokers in the Illawarra in 1998, 58.3% of males and 44.7% of females

reported that they had **no intention to quit within the next 6 months**. While this proportion of Illawarra females was average for NSW, the proportion of **Illawarra males** was considerably (although not significantly) higher than the NSW average. (58.3% versus 46.7%). In fact the Illawarra had the **highest** proportion of male smokers with no intention to quit within the next 6 months of all NSW Health Areas (Figure 22).[1]

- In 1997-1998 an estimated 72.3% of Illawarra adults lived in **smoke-free households**. In addition, 75.0% of employed Illawarra adults reported smoking was **banned indoors at work**. Females were more likely to report that smoking was banned indoors at their workplace than males (84.6% versus 68.6%). These proportions were average for NSW (Figure 22).

- Given the small numbers of respondents to the *NSW Health Survey* at the LGA (or smaller geographic) level, these data are not useful for looking at smoking prevalence on a geographic basis within the Illawarra. However, to give some indication of geographic variation in smoking prevalence, data from the *NSW Midwives Data Collection* for 1996-1999 were analysed to provide information about the prevalence of smoking (at least among women during pregnancy) at the LGA level (and also a smaller sub-area level for Wollongong LGA residents).

  In 1996-1999 the prevalence of (any) smoking during pregnancy among Illawarra females was 24.7% (4,328 of 17,517 confinements). Smoking prevalence was **highest** among women resident in the **Shoalhaven** LGA (30.5%, 1,199 of 3,938), followed by **Shellharbour** LGA (27.2%, 910 of 3,349), then Wollongong LGA (22.3%, 2,100 of 9,433). Smoking prevalence was **lowest** among women in the **Kiama** LGA (14.9%, 119 of 797) (Figure 24).

  Within the Wollongong LGA, the prevalence of smoking during pregnancy was highest in the Warrawong area (postcodes 2502,2505,2506), where over one third of the women were smokers (33.7%, 461 of 1,369). In addition, more than a quarter of women were smokers in the Dapto area (postcode 2530) and Corrimal area (postcodes 2518, 2519) (Figure 24).

  The prevalence of smoking during pregnancy was less than 20% in the Thirroul area (postcodes 2508, 2515, 2516, 2517) (17.1%, 330 of 1,929), Wollongong area (postcode 2500) (16.6%, 250 of 1,508) and Unanderra area (postcodes 2525, 2536) (205 of 1,375) (Figure 24).

Physical Activity

- Moderate physical activity (with energy expenditure equivalent to brisk walking for a total of 30 minutes daily) reduces the risk of coronary heart disease, stroke and hypertension. It also has health benefits in relation to: diabetes mellitus (Type 2); cancers of the colon, breast and lung; musculoskeletal health; and mental health.[1] In 1996 inadequate physical activity was responsible for about 7.0% of the total disease burden in Australia (as measured in disability-adjusted life years (DALYS)).[5]

- In 1998 an estimated 65.1% of Illawarra adults had undertaken **adequate physical activity** in the previous week, which was **higher** than the NSW average (60.9%), the difference nearly reaching statistical significance. Similarly the prevalence of adequate physical activity among Illawarra males and females (69.0% and 61.3% respectively) were both higher (but not significantly so) than the NSW averages (64.7% and 57.2% respectively) (Figure 19).

  Adequate physical activity was highest in the youngest age group, (73.9% of 16-24 year olds) then declined steadily with age (to 39.0% in the age group 75 years and over) (Figure 23). Notably, the relatively high prevalence of adequate physical activity among Illawarra males and females compared to their NSW counterparts, is

mainly explained by the relatively high rates among the middle-aged (35-64 years).[1]
Adequate physical activity was more common among Illawarra males than females in all age groups, the difference being most pronounced in the age group 75 years and over (males: 61.0%, females: 21.7%) (Figure 25).

Nutrition

- Diet contributes substantially to risk of a range of chronic diseases, including: coronary heart disease, stroke, diabetes mellitus (Type 2), cancer, osteoporosis, dental caries, gall bladder disease and diverticular disease.[1]

Fruit, Vegetables, Bread and Cereal

- In 1997-1998 the Illawarra compared favourably with NSW in terms of consumption of the recommended quantities of fruit and, particularly, vegetables, daily. Nevertheless, less than a half of Illawarra adults reported eating the recommended quantities of fruit and less than a quarter the recommended quantities of vegetables. Males were less likely than females, and younger people than older people, to eat adequate amounts of fruit and vegetables.[1]

  (The recommended daily quantities are:
  - fruit:- 3 services for people aged 18 years or less, 2 serves for people aged 18 years or more
  - vegetables:- 5 serves for males aged 19-60 years, 5 serves for males aged less than 19 years and more than 60 years, 4 serves for females of all ages
  - bread and cereals:- 5 serves for males aged 19-60 years, 4 serves for males aged less than 19 years or more than 60 years, 4 serves for females aged up to 60 years, 3 serves for females aged over 60 years[1]).

- In 1997-1998 an estimated 21.6% of Illawarra residents ate the recommended quantities of **vegetables** daily, which was significantly **higher** than the NSW average (15.8%), and the 3rd highest of the NSW Health Areas. Similarly prevalence rates of consumption of recommended daily vegetables among Illawarra males and females (16.7% and 26.4% respectively) were both significantly higher than the NSW averages (10.3% and 21.1% respectively) (Figure 26).
- In 1997-1998 an estimated 47.1% of Illawarra adults ate the recommended quantities of **fruit** daily, which was **higher** than the NSW average (44.1%), the difference nearly reaching statistical significance. The Illawarra was also the 3rd highest of the NSW Health Areas in terms of recommended quantities of fruit eaten. Similarly, prevalence rates of consumption of recommended fruit among Illawarra males and females (40.8% and 53.3% respectively) were both higher (but not significantly so) than the NSW averages (37.9% and 50.2% respectively) (Figure 26).

- In 1997-1998 an estimated 19.4% of Illawarra adults ate the recommended quantities of **bread and cereal** daily (males: 22.8%, females: 16.0%), which was average for NSW (persons: 18.4%, males: 21.7%, females: 15.3%) (Figure 26).

High Fat Foods

- In the 1997 and 1998 *NSW Health Surveys* fat consumption was assessed by five questions: four concerned with high fat foods (meat cooked with added fat, fried potato products, processed meats, and battered/ crumbed fried food); and one question about low fat milk.

  The Illawarra compared unfavourably with NSW in terms of consumption of all the high fat food categories, particularly fried potato products. Males were more likely than females, and younger people than older people, to eat high fat foods (and less likely to consume low fat milk products) (Figure 27).[1]

- In 1997-1998 the proportions of Illawarra adults eating **fried potato products**, **processed meats**, and **battered/ crumbed fried foods**, at least twice weekly,

were 26.7%, 44.3% and 16.8%, respectively. A similarly high proportion of Illawarra adults (27.2%) reported usually eating **meat fried** or cooked with added fat (Figure 27).

These prevalence rates for consumption of high fat foods were all **higher** than the NSW averages (23.3%, 43.5%, 14.8%, and 24.6%, respectively); however the differences were not significant. Notably, the Illawarra was the 2rd highest of the NSW Health Areas in terms of consumption of fried potato products.

- In 1997-1998 an estimated 47.7% of Illawarra adults (males: 42.0%, females: 53.1%) usually drank **low fat milk**, which was slightly above the NSW average (45.7%) (Figure 27).

Overweight and Obesity

- Overweight and obesity increase the risk of a range of health problems, including: coronary heart disease, diabetes mellitus (Type II), breast cancer, gall stones, degenerative joint disease, and obstructive sleep apnoea.[1]

  In the 1997 and 1998 *NSW Health Surveys* respondents were asked about their height and weight, which were used to estimate their body mass index (BMI), which was then used to classify respondents into standard body weight categories. [1]

- In 1997-1998 an estimated 47.0% of Illawarra adults were **overweight or obese**, which was significantly **higher** than the NSW average (42.3%), and higher than all other urban areas (as well as the Mid North Coast and Northern Rivers), but not the other rural areas.[1]

  Similarly the prevalence of overweight or obesity among Illawarra males and females (54.8% and 38.9% respectively) were both higher than the NSW averages (50.0% and 34.5% respectively), the difference being significant for females (Figure 19).

  (The 54.8% of Illawarra overweight/ obese males included 13.5% who were obese, and 41.3% who were overweight. An estimated 41.1% of Illawarra males were of acceptable weight and 4.1% were underweight.[1]

  The 38.9% of Illawarra overweight/ obese females included 13.8% who were obese, and 25.1% who were overweight. An estimated 47.3% of Illawarra females were of acceptable weight and 13.8% were underweight.[1])

- The prevalence of overweight/ obesity was lowest among 16-24 year olds, (males: 23.2%, females: 14.6%), increasing with age to a peak of 69.0% among 45-54 year old males and 53.8% among 55-64 year old females, and then declining again with age (Figure 28).

  Overweight or obesity was more common among Illawarra males than females in all age groups, the difference being most pronounced in the age group 35-44 years (males: 63.8%, females: 34.2%) (Figure 28).

- Over the last decade the prevalence of overweight/ obesity (among people aged 18 years and over) has **increased** considerably among both Illawarra males (from 43.9% in 1989/90 to 56.3% in 1997-1998) and females (from 30.5% to 40.2%), paralleling trends throughout NSW (Figure 29).[1,6-7]

Diabetes Mellitus

- Diabetes mellitus is associated with a range of long term vascular complications, including coronary heart disease, loss of vision, kidney failure, gangrene of the legs, and loss of sensation in the extremeties.[1]
- In 1997-1998 4.2% of Illawarra males and 4.8% of Illawarra females reported that they **had doctor-diagnosed diabetes**. While the prevalence of doctor-diagnosed diabetes among Illawarra **males** was similar to the NSW average (3.9%), for Illawarra **females** the prevalence was significantly **higher** than the NSW average (3.2%) (Figure 19). In fact in the Illawarra, the prevalence of doctor-diagnosed diabetes among females was the highest of the NSW Health Areas.

High Blood Pressure

- Hypertension increases the risk of a number of disorders, including coronary heart disease, stroke, congestive heart failure, and renal insufficiency.[1] In 1996 hypertension was responsible for over 5% of the total disease burden in Australia.[5]

Measurement

- In 1997-1998 more than half of Illawarra adults (males: 48.6%, females 56.2%) reported that they had had **their** blood pressure measured in the last three months, similar to the NSW averages (Figure 30).

Doctor-Diagnosed High Blood Pressure

- In 1997-1998 nearly 20% of Illawarra adults (males: 19.1%, females 18.8%) reported that they had been told by a doctor that they had high blood pressure, similar to the NSW averages (Figure 19). (These figures refer only to those who had ever had their blood pressure measured, and exclude people reporting that their high blood pressure was only temporary, including women with hypertension in pregnancy).

Management

- Of those Illawarra adults with current high blood pressure, 19.5% of males and 12.4% of females had not had their blood pressure measured in the previous three months, similar to the NSW averages (Figure 31).

- About 68.7% of Illawarra males and 80.8% of females with current high blood pressure reported that they were taking medications to manage their blood pressure, again similar to the NSW averages (Figure 31).

  (In addition, about a half of people with current high blood pressure follow a diet, about a third exercise most days, and about a quarter try to lose weight)[1].

High Blood Cholesterol

- Risk of coronary heart disease increases steadily with increasing blood cholesterol levels.[1] In 1996 high cholesterol was responsible for nearly 3% of the total disease burden in Australia.[5]

Measurement

- In 1997-1998 over a third of Illawarra residents aged 16 years and over (males: 37.1%, females: 37.6%) reported that they had had their cholesterol measured in the previous 12 months. However about a third (males: 32.7%, females: 32.2%) reported that they had never had their cholesterol measured (Figure 30).

  For those in the high risk age groups (males aged 35-64 years and females aged 45-64 years), as many as 20.8% of Illawarra males and 12.4% of Illawarra females had never had their cholesterol measured (Figure 30).

  While overall males and females appear to be screened for cholesterol with similar frequency, when high risk age groups only are considered, men appear to be even less likely than women to be appropriately screened (Figure 30).

- These cholesterol screening indicators among Illawarra residents were all similar to the NSW averages (Figure 30).

Doctor-Diagnosed High Cholesterol

- In 1997-1998 nearly 15% of Illawarra adults (males: 13.0%, females 14.7%) reported that they had been told by a doctor that they had high cholesterol, similar to the NSW averages (Figure 19).

Management

- Of those Illawarra adults with high blood cholesterol, 27.1% of males and 31.9% of females had not had their cholesterol levels checked in the previous 12 months. These proportions were slightly, but not

significantly, higher, than the NSW averages (males: 23.5%, females: 25.5%) (Figure 30).

- More than three quarters of Illawarra residents with high blood cholesterol (males: 76.4%, females: 80.9%) reported that they were following a diet.

  More than a third (males: 37.2%, females: 35.7%) reported that they were taking medications, with a quarter (males: 23.7%, females: 23.9%) trying to lose weight (Figure 31).

  This pattern of actions taken by Illawarra residents to manage high blood cholesterol was similar to that for NSW residents (Figure 31).

TABLE 1:
Causes of Death Among Illawarra Residents, 1994 – 1998

ICD9 CHAPTER HEADING (ICD9 codes)	MALES		FEMALES	
	Number	Per cent	Number	Per cent
CIRCULATORY (390-459)	2,889	42.4	2,579	47.1
NEOPLASM (140-239)	2,079	30.5	1,462	26.7
RESPIRATORY (460-519)	581	8.5	439	8.0
INJURY & POISONING (excl. medical misadventure etc) (E800-869, E880-929,E950-999)	420	6.2	177	3.2
DIGESTIVE (520-579)	188	2.8	167	3.0
ENDOCRINE, NUTRITIONAL, METABOLIC & IMMUNITY (240-279)	145	2.1	135	2.5
NERVOUS SYSTEM & SENSE ORGANS (320-389)	138	2.0	132	2.4
MENTAL DISORDERS (290-319)	117	1.7	91	1.7
INFECTION (001-139)	81	1.2	51	0.9
GENITOURINARY (580-629)	70	1.0	113	2.1
OTHER	101	1.5	132	2.4
TOTAL	6,809	100.0	5,478	100.0

Source: ABS *Death Registrations* for 1994-1998 accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

TABLE 2:
Causes of Hospitalisation Among Illawarra Residents, 1997/98 – 1998/99

ICD9 CHAPTER HEADING (ICD9 codes)	MALES		FEMALES	
	Number	Per cent	Number	Per cent
DIGESTIVE (520-579)	12,752	12.4	13,407	11.9
CIRCULATORY (390-459)	10,801	10.5	7,826	6.9
INJURY & POISONING (800-999)	8,974	8.8	5,934	5.3
NEOPLASM (140-239)	6,713	6.5	6,634	5.9
MUSCULOSKELETAL/ CONNECTIVE TISSUE (710-739)	6,633	6.5	6,255	5.5
GENITOURINARY (580-629)	4,108	4.0	8,418	7.5
RESPIRATORY (460-519)	6,449	6.3	5,151	4.6
NERVOUS SYSTEM & SENSE ORGANS (320-389)	5,344	5.2	5,910	5.2
SYMPTOMS/ SIGNS/ ILL-DEFINED CONDITIONS (780-799)	5,646	5.5	5,387	4.8
MENTAL DISORDERS (290-319)	2,871	2.8	3,085	2.7
PERINATAL (760-779)	1,642	1.6	1,308	1.2
SKIN/ SUBCUTANEOUS TISSUE (680-709)	1,493	1.5	1,441	1.3
BLOOD & BLOOD-FORMING ORGANS (280-289)	1,519	1.5	1,243	1.1
INFECTION (001-139)	1,240	1.2	1,214	1.1
ENDOCRINE, NUTRITIONAL, METABOLIC & IMMUNITY (240-280)	1,228	1.2	1,319	1.2
CONGENITAL ANOMALIES (740-759)	800	0.8	709	0.6
PREGNANCY-RELATED (630-676)	-	0.0	14,385	0.1
SUPPLEMENTARY V CODES (V01-82)	24,345	23.7	23,142	20.5
TOTAL	102,558	100.0	112,768	100.0

Source: *NSW Inpatients Statistics Collection* for 1997/98 – 1998/99 accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

TABLE 3:
Selected Cardiovascular Causes of Death (1994-1998) and Hospitalisation (1997/98-1998/99) Among Residents of the Illawarra Health Area

Cause (ICD9 codes)	MALES			FEMALES		
	Number	Standardised mortality or separation ratio	Excess deaths or separations	Number	Standardised mortality or separation ratio	Excess deaths or separation
DEATHS						
Coronary Heart Disease (410-414), all ages	1,880	1.18 ↑	+285	1,381	1.11 ↑	+139
Coronary Heart Disease (410-414), 25-74 years	968	1.19 ↑	+157	404	1.24 ↑	+78
Stroke (430-438)	541	1.06	+28	686	0.99	-5
HOSPITALISATIONS						
Coronary Heart Disease (410-414)	5,307	1.20 ↑	+869	2,597	1.14 ↑	+309
Acute myocardial infarct (410)	1,003	1.12 ↑	+111	411	0.92	-38
Other CHD (411-414)	4,304	1.21 ↑	+758	2,186	1.19 ↑	+348
Stroke (430-438)	1,192	1.10 ↑	+106	1,124	1.17 ↑	+162

Source: *NSW Inpatients Statistics Collection* for 1997/98 – 1998/99 (and Australian Bureau of Statistics (ABS) *Estimated Resident Populations* for 30 June 1998), ABS *Death Registrations* for 1994-1998 (and ABS *Estimated Resident Populations* for 30 June 1996) accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

Notes: 1. The SSR (or SMR) is the ratio of the actual (or `observed') number of Illawarra Health Area resident separations (or deaths) to the `expected' number of Illawarra Health Area resident separations (or deaths). The `expected' numbers are calculated by multiplying the age-specific rates in the NSW population by the population numbers resident in the Illawarra Health Area.

TABLE 4:
Deaths (1994-1998) and Hospitalisations (1997/98-1998/99) due to Coronary Heart Disease, by Local Government Area (LGA)

Local Government Area	MALES				FEMALES			
	Number	Standardised mortality or separation ratio		Excess deaths or separations	Number	Standardised mortality or separation ratio		Excess deaths or separations
DEATHS, ALL AGES								
Wollongong	995	1.20	↑	+163	781	1.14	↑	+98
Shellharbour	234	1.37	↑	+63	153	1.27	↑	+32
Kiama	94	0.89		-12	105	1.07		+6
Shoalhaven	557	1.14	↑	+68	342	1.00		+2
Total Illawarra	1,880	1.18	↑	+285	1,381	1.11	↑	+139
DEATHS, 25-74 YEARS								
Wollongong	523	1.24	↑	+100	227	1.32	↑	+56
Shellharbour	135	1.38	↑	+37	60	1.53	↑	+21
Kiama	32	0.70	↓	-14	14	0.70		-6
Shoalhaven	278	1.14	↑	+35	103	95.0		+8
Total Illawarra	968	1.19	↑	+157	404	1.24	↑	+78
HOSPITALISATIONS								
Wollongong	2,578	1.12	↑	+271	1,240	1.02		+26
Shellharbour	765	1.35	↑	+196	346	1.27	↑	+73
Kiama	275	1.03		+8	140	0.93		-11
Shoalhaven	1,689	1.30	↑	+394	871	1.34	↑	+221
Total Illawarra	5,307	1.20	↑	+869	2,597	1.14	↑	+309

Source: *NSW Inpatients Statistics Collection* for 1997/98 – 1998/99 (and Australian Bureau of Statistics (ABS) *Estimated Resident Populations* for 30 June 1998), ABS *Death Registrations* for 1994-1998 (and ABS *Estimated Resident Populations* for 30 June 1996) accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

Notes:

1. The SSR is the ratio of the actual (or `observed') number of Illawarra Health Area (or LGA) resident separations to the `expected' number of Illawarra Health Area (or LGA) resident separations. The `expected' number of separations is calculated by multiplying the age-specific separation rates in the NSW population by the population numbers resident in the Illawarra Health Area (or LGA). The SMR is calculated in the same way using death data.
2. CHD ICD9 Codes = 410-414

TABLE 5: Deaths (1994-1998) and Hospitalisations (1997/98-1998/99) due to Coronary Heart Disease in Sub-Areas within Wollongong LGA

Sub-area (postcodes)	MALES			FEMALES		
	Number	Standardised mortality or separation ratio	Excess deaths or separations	Number	Standardised mortality or separation ratio	Excess deaths or separations
DEATHS, ALL AGES						
Thirroul (2508,2515,2516,2517)	154	1.06	+8	128	0.94	-9
Corrimal (2518,2519)	228	1.26 ↑	+47	182	1.30 ↑	+42
Wollongong (2500)	216	1.30 ↑	+50	197	1.19 ↑	+31
Warrawong (2502,2505,2506)	162	1.23 ↑	+30	87	0.98	-2
Unanderra (2525,2526)	101	1.11	+10	91	1.27 ↑	+19
Dapto (2530)	87	1.18	+13	71	1.26	+15
DEATHS, 25-74 YEARS						
Thirroul (2508,2515,2516,2517)	64	0.98	-2	32	1.12	+3
Corrimal (2518,2519)	110	1.29 ↑	+26	52	1.41 ↑	+15
Wollongong (2500)	109	1.50 ↑	+36	55	1.68 ↑	+22
Warrawong (2502,2505,2506)	102	1.39 ↑	+28	34	1.23	+6
Unanderra (2525,2526)	55	1.11	+6	27	1.50	+9
Dapto (2530)	55	1.23	+10	21	1.30	+5
HOSPITALISATIONS						
Thirroul (2508,2515,2516,2517)	414	1.08	+30	181	0.85 ↓	-33
Corrimal (2518,2519)	608	1.30 ↑	+141	243	0.98	-6
Wollongong (2500)	455	1.09	+36	266	1.07	+18
Warrawong (2502,2505,2506)	431	1.13 ↑	+49	204	1.13	+24
Unanderra (2525,2526)	275	0.99	-3	149	1.13	+18
Dapto (2530)	355	1.41 ↑	+103	171	1.47 ↑	+55

Source: *NSW Inpatients Statistics Collection* for 1997/98 – 1998/99 (and Australian Bureau of Statistics (ABS) *Estimated Resident Populations* for 30 June 1996), ABS *Death Registrations* for 1994-1998 (and ABS *Estimated Resident Populations* for 30 June 1996) accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.* 30 June 1996 populations for sub-areas were compiled from Census postcode populations provided by the Australian Bureau of Statistics.

Notes:

1. The SSR is the ratio of the actual (or `observed') number of sub-area resident separations to the `expected' number of sub-area resident separations. The `expected' number of separations is calculated by multiplying the age-specific separation rates in the NSW population by the population numbers resident in the sub-area. The SMR is calculated in the same way using death data. 2. Observed numbers in this table are slightly less than in the previous table for Wollongong LGA residents, as records where postcodes were incompatible with the Wollongong LGA coding have been excluded. In addition, the SSR and `excess separations' should be considered estimates as 30 June 1996 populations were used (rather than populations pertaining to the mid-point of the time period of interest, i.e. 30 June 1998)).
2. CHD ICD9 Codes = 410-414

TABLE 6: Deaths (1994-1998) and Hospitalisations (1997/98-1998/99) due to Stroke, by Local Government Area (LGA)

Local Government Area	MALES			FEMALES		
	Number	Standardised mortality or separation ratio	Excess deaths or separations	Number	Standardised mortality or separation ratio	Excess deaths or separations
DEATHS						
Wollongong	321	1.20 ↑	+54	401	1.05	+19
Shellharbour	43	0.82	-9	47	0.71 ↓	-19
Kiama	28	0.78	-8	63	1.11	+6
Shoalhaven	149	0.95	-8	175	0.94	-12
Total Illawarra	541	1.06	+28	686	0.99	-5
HOSPITALISATIONS						
Wollongong	628	1.12 ↑	+67	610	1.18 ↑	+92
Shellharbour	135	1.07	+9	115	1.06	+7
Kiama	68	0.97	-2	61	0.91	-6
Shoalhaven	361	1.10	+33	338	1.26 ↑	+69
Total Illawarra	1,192	1.10 ↑	+106	1,124	1.17 ↑	+162

Source: *NSW Inpatients Statistics Collection* for 1997/98 – 1998/99 (and Australian Bureau of Statistics (ABS) *Estimated Resident Populations* for 30 June 1998), ABS *Death Registrations* for 1994-1998 (and ABS *Estimated Resident Populations* for 30 June 1996) accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

Notes:

1. The SSR is the ratio of the actual (or `observed') number of Illawarra Health Area (or LGA) resident separations to the `expected' number of Illawarra Health Area (or LGA) resident separations. The `expected' number of separations is calculated by multiplying the age-specific separation rates in the NSW population by the population numbers resident in the Illawarra Health Area (or LGA). The SMR is calculated in the same way using death data.
2. Stroke ICD9 Codes = 430-438

TABLE 7:
Deaths (1994-1998) and Hospitalisations (1997/98-1998/99) due to Stroke in Sub-Areas within the Wollongong LGA

Sub-area (postcodes)	MALES			FEMALES		
	Number	Standardised mortality or separation ratio	Excess deaths or separations	Number	Standardised mortality or separation ratio	Excess deaths or separations
DEATHS						
Thirroul (2508,2515,2516,2517)	62	1.27	+13	76	0.97	-2
Corrimal (2518,2519)	69	1.15	+9	71	0.92	-6
Wollongong (2500)	71	1.28	+15	115	1.21	+20
Warrawong (2502,2505,2506)	36	0.88	-5	32	0.67 ↓	-16
Unanderra (2525,2526)	38	1.33	+9	71	1.76 ↑	+31
Dapto (2530)	34	1.56 ↑	+12	29	0.93	-2
HOSPITALISATIONS						
Thirroul (2508,2515,2516,2517)	109	1.14	+13	100	1.04	+4
Corrimal (2518,2519)	168	1.42 ↑	+50	136	1.30 ↑	+31
Wollongong (2500)	111	1.03	+3	131	1.16	+18
Warrawong (2502,2505,2506)	98	1.09	+8	96	1.35 ↑	+25
Unanderra (2525,2526)	53	0.84	-10	54	0.97	-1
Dapto (2530)	71	1.34 ↑	+18	84	1.79 ↑	+37

Source: *NSW Inpatients Statistics Collection* for 1997/98 – 1998/99 (and Australian Bureau of Statistics (ABS) *Estimated Resident Populations* for 30 June 1996), ABS *Death Registrations* for 1994-1998 (and ABS *Estimated Resident Populations* for 30 June 1996) accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.* 30 June 1996 populations for sub-areas were compiled from Census postcode populations provided by the Australian Bureau of Statistics.

Notes:

1. The SSR is the ratio of the actual (or `observed') number of sub-area resident separations to the `expected' number of sub-area resident separations. The `expected' number of separations is calculated by multiplying the age-specific separation rates in the NSW population by the population numbers resident in the sub-area. The SMR is calculated in the same way using death data.
2. Observed numbers in this table are slightly less than in the previous table for Wollongong LGA residents, as records where postcodes were incompatible with the Wollongong LGA coding have been excluded. In addition, the SSR and `excess separations' should be considered estimates as 30 June 1996 populations were used (rather than populations pertaining to the mid-point of the time period of interest, i.e. 30 June 1998)).
3. Stroke ICD9 Codes = 430-438

FIGURE 1:
Major Causes of Death among Male Residents of the Illawarra Health Area, by Sex, 1994-1998

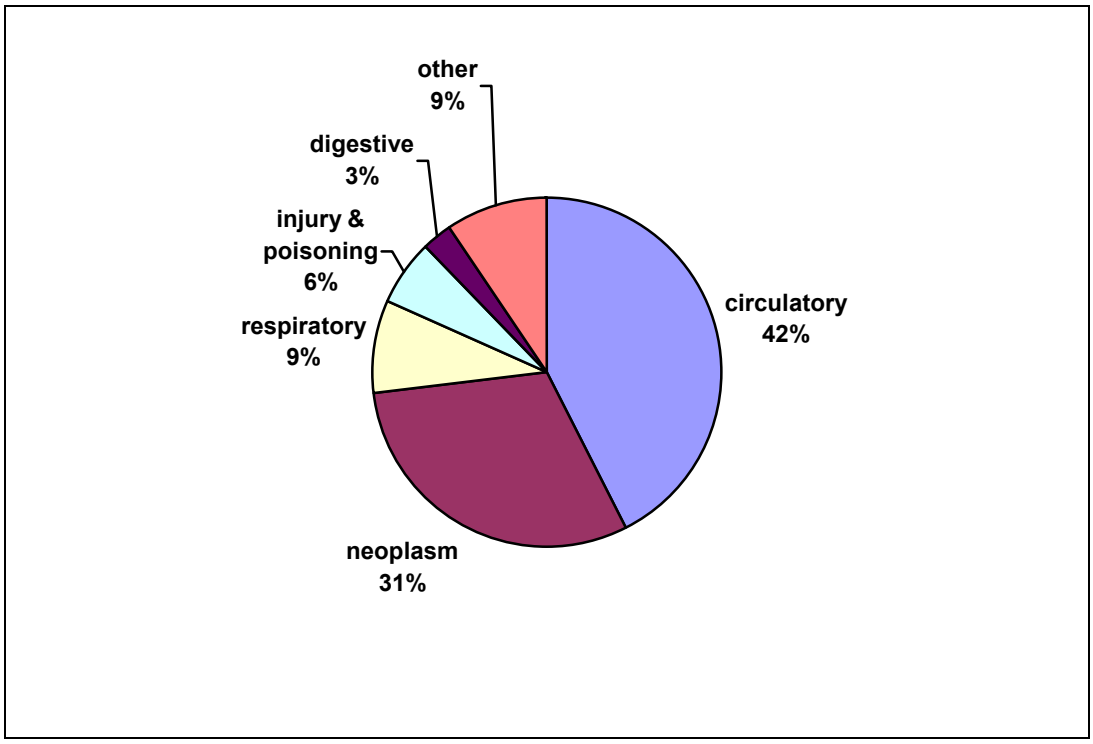


FIGURE 2:
Major Causes of Death Among Female Residents of the Illawarra Health Area, by Sex, 1994-1998

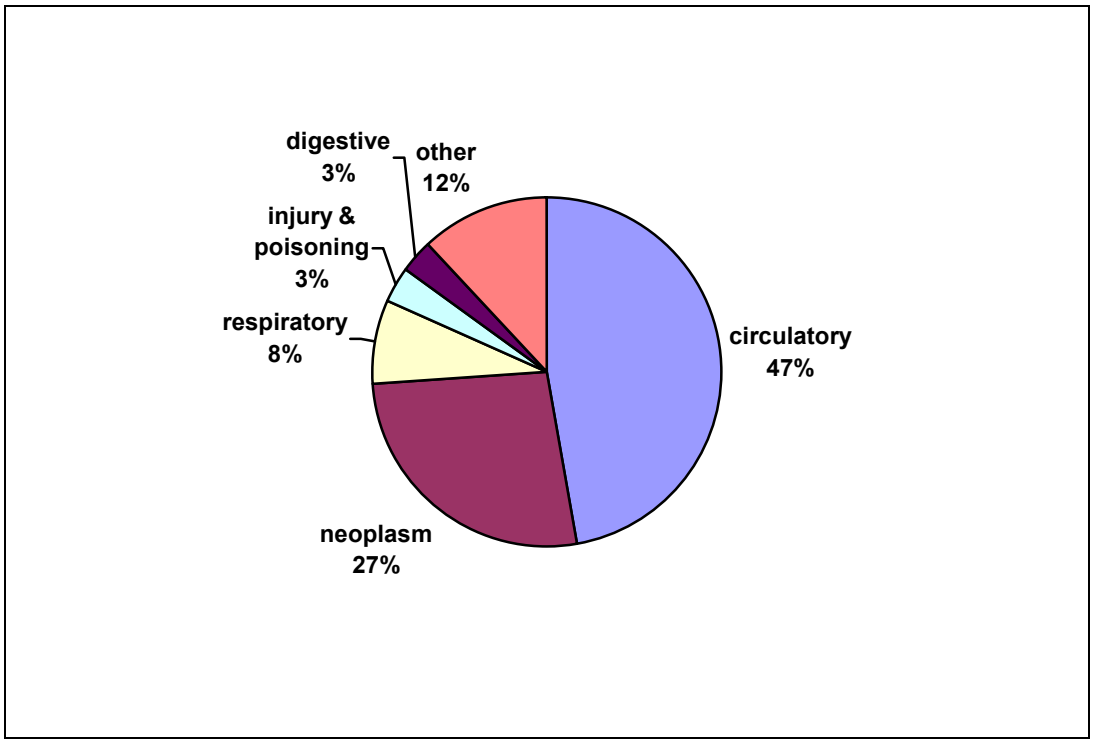


FIGURE 3:
Major Causes of Hospitalisation among Male Residents of the Illawarra Health Area, by Sex, 1997/98-1998/99

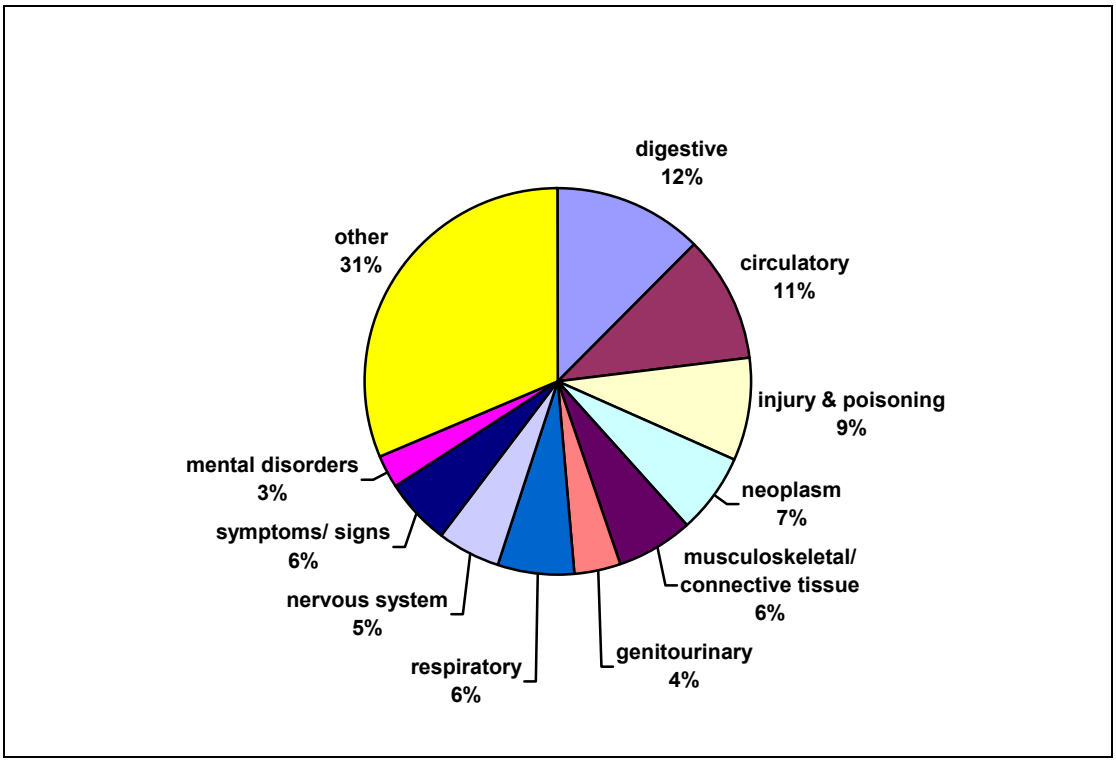


FIGURE 4:
Major Causes of Hospitalisation among Female Residents of the Illawarra Health Area, by Sex, 1997/98-1998/99

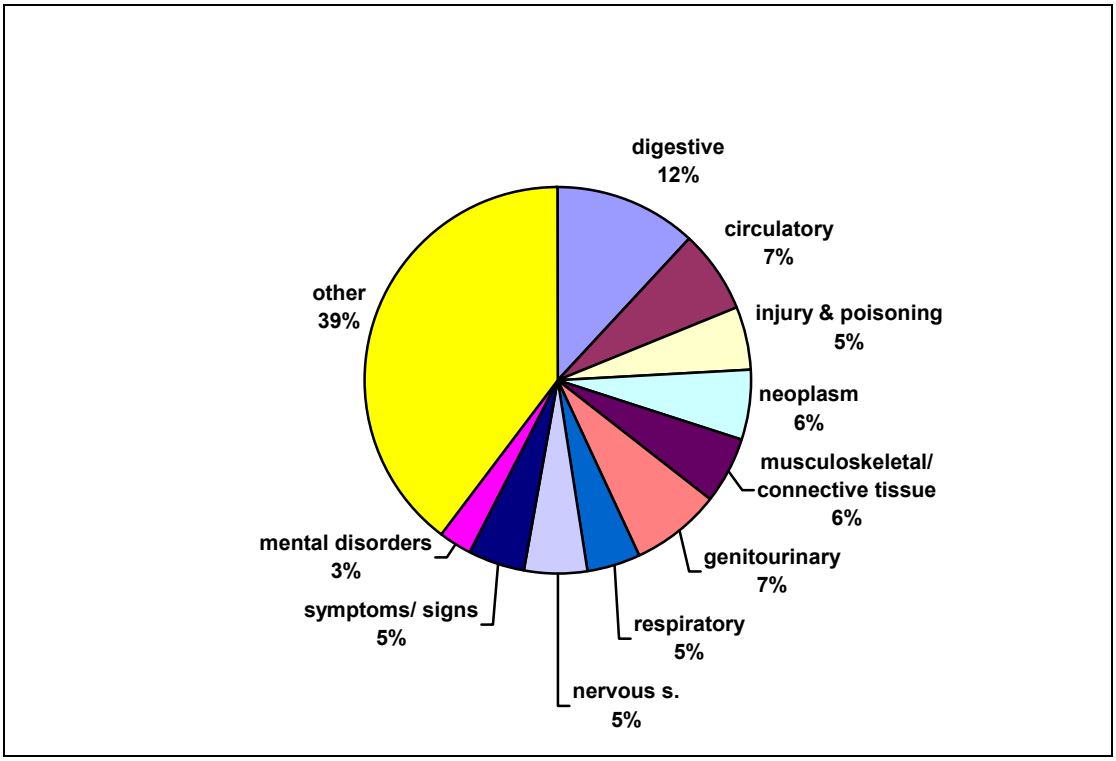
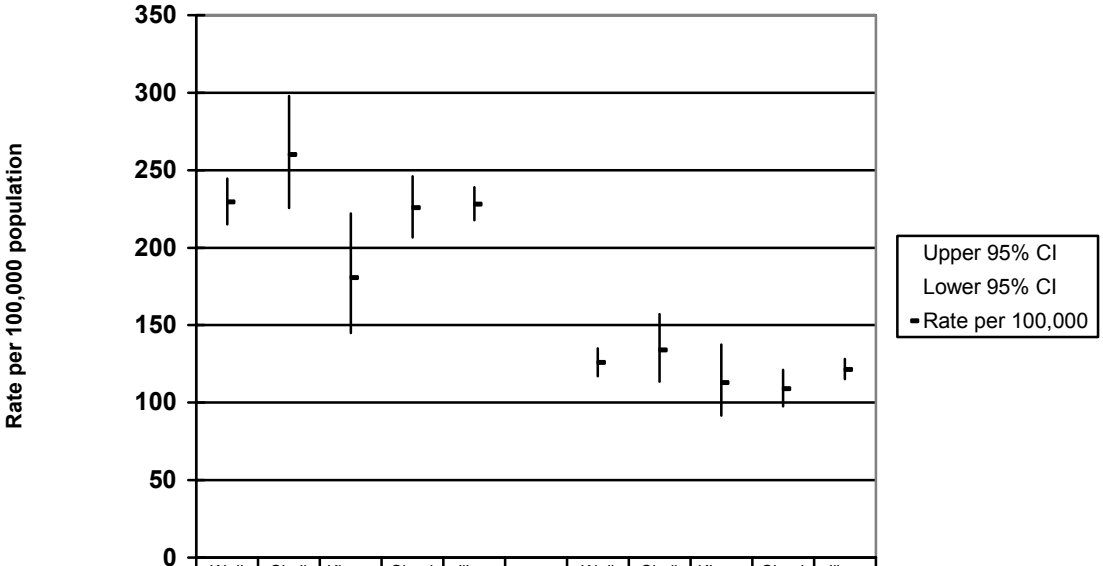
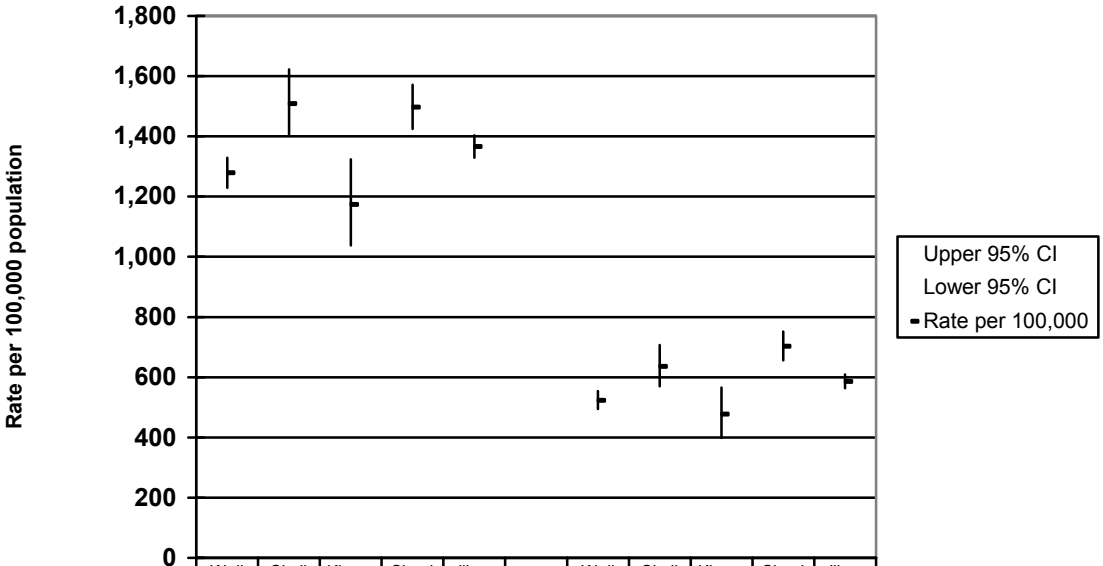


FIGURE 5: Directly Age-Standardised Coronary Heart Disease Mortality Rates among Residents of Illawarra Health Area, and each of its Local Government Areas, all Ages, by Sex, 1994-1998



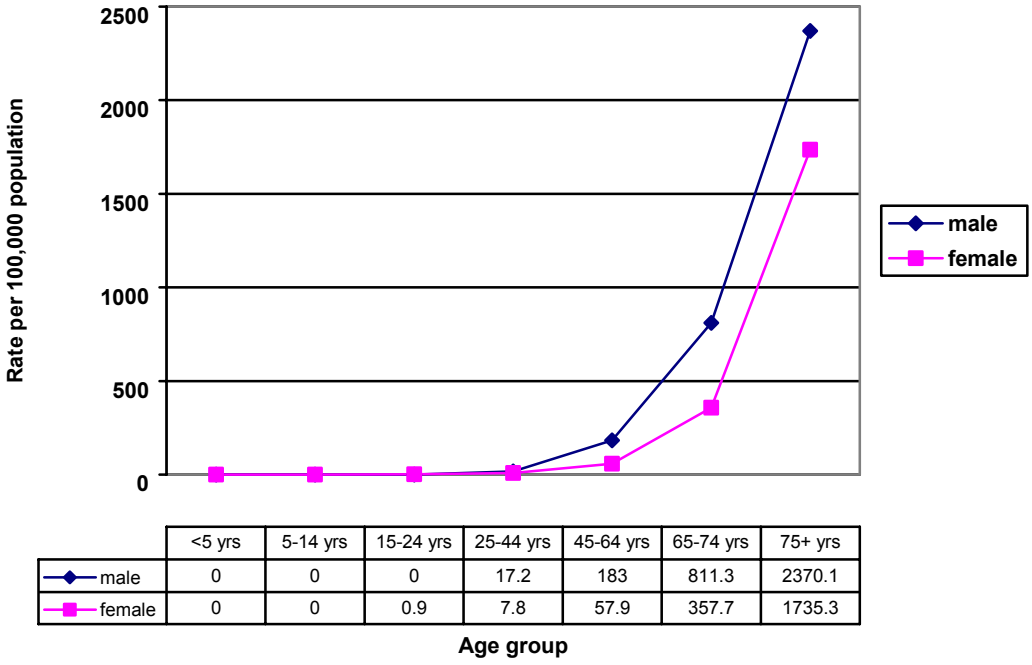
	Woll M	Shell M	Kiama M	Shoal M	Illaw M		Woll F	Shell F	Kiama F	Shoal F	Illaw F
Upper 95% CI	244.6	298.0	222.1	246.0	239.0		135.0	157.2	137.4	121.1	128.1
Lower 95% CI	215.1	225.6	145.0	206.6	217.6		117.1	113.5	91.6	97.6	115.1
Rate per 100,000	229.5	260.0	180.6	225.7	228.1		125.8	134.0	112.8	108.9	121.4

FIGURE 6: Directly Age-Standardised Coronary Heart Disease Hospital Separation Rates among Residents of Illawarra Health Area, and each of its Local Government Areas, by Sex, 1997/98-1998/99



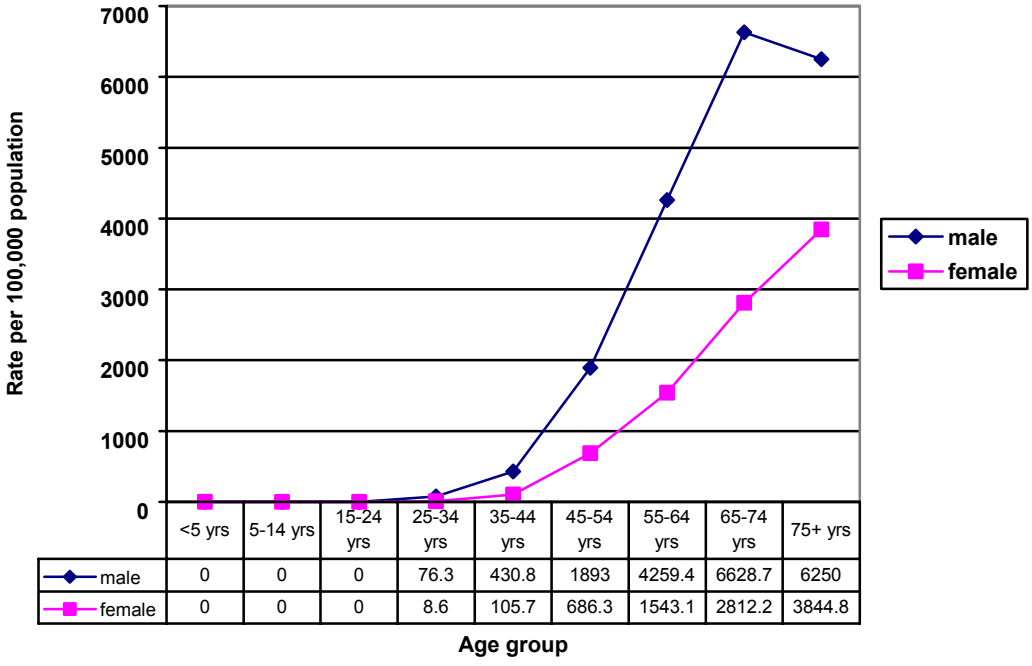
	Woll M	Shell M	Kiama M	Shoal M	Illaw M		Woll F	Shell F	Kiama F	Shoal F	Illaw F
Upper 95% CI	1329.4	1622.0	1323.6	1571.4	1403.3		553.7	706.7	565.9	751.3	608.8
Lower 95% CI	1229.5	1401.1	1037.8	1424.5	1329.0		494.4	570.1	398.6	655.6	563.2
Rate per 100,000	1278.7	1508.6	1174.3	1496.6	1365.7		523.4	635.7	477.0	702.3	585.7

FIGURE 7:
Age-Specific Mortality Rates for Coronary Heart Disease Among Residents of the Illawarra Health Area, by Sex, 1994-1998



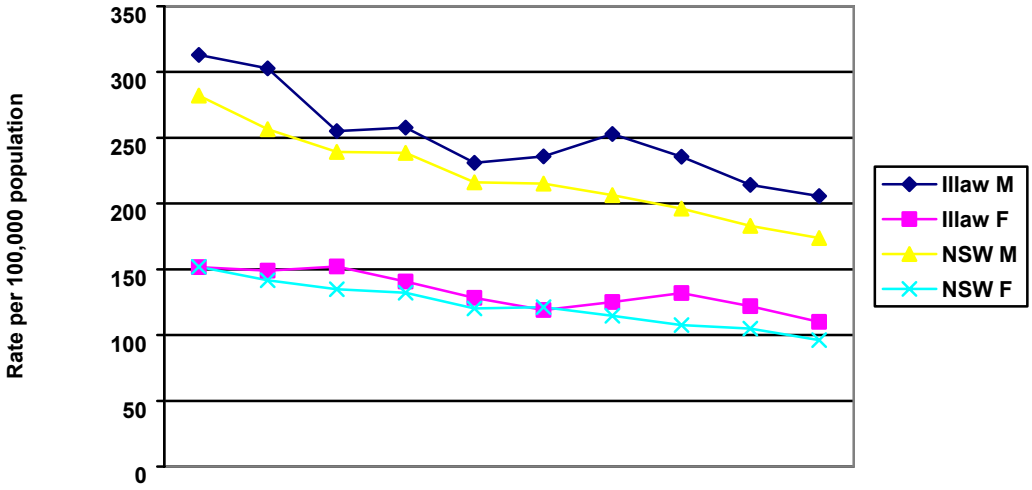
	<5 yrs	5-14 yrs	15-24 yrs	25-44 yrs	45-64 yrs	65-74 yrs	75+ yrs
male	0	0	0	17.2	183	811.3	2370.1
female	0	0	0.9	7.8	57.9	357.7	1735.3

FIGURE 8:
Age-Specific Hospital Separation Rates for Coronary Heart Disease among Residents of the Illawarra Health Area, by Sex, 1997/98-1998/99



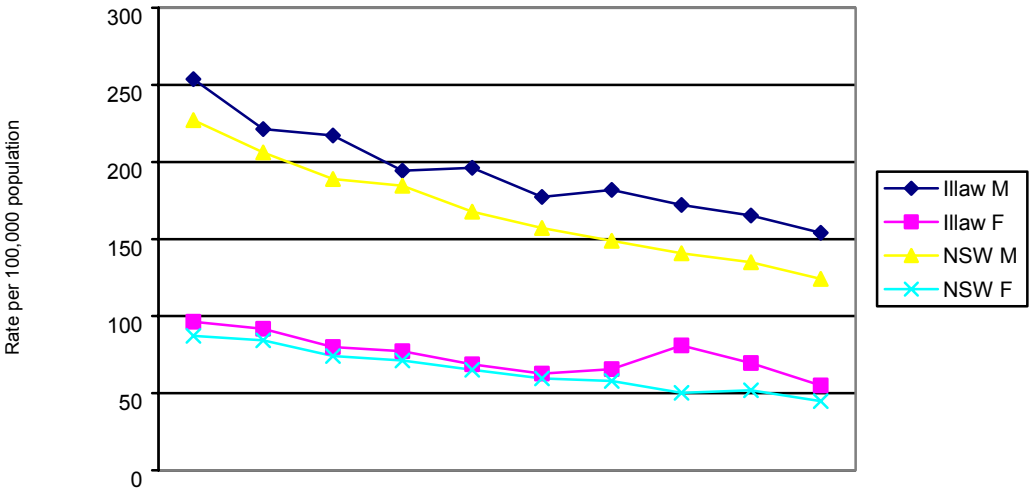
	<5 yrs	5-14 yrs	15-24 yrs	25-34 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	75+ yrs
male	0	0	0	76.3	430.8	1893	4259.4	6628.7	6250
female	0	0	0	8.6	105.7	686.3	1543.1	2812.2	3844.8

FIGURE 9:
Trends in Directly Age-Standardised Mortality Rates for Coronary Heart Disease among Residents of the Illawarra Health Area and NSW[1], all Ages, by Sex, 1989-1998



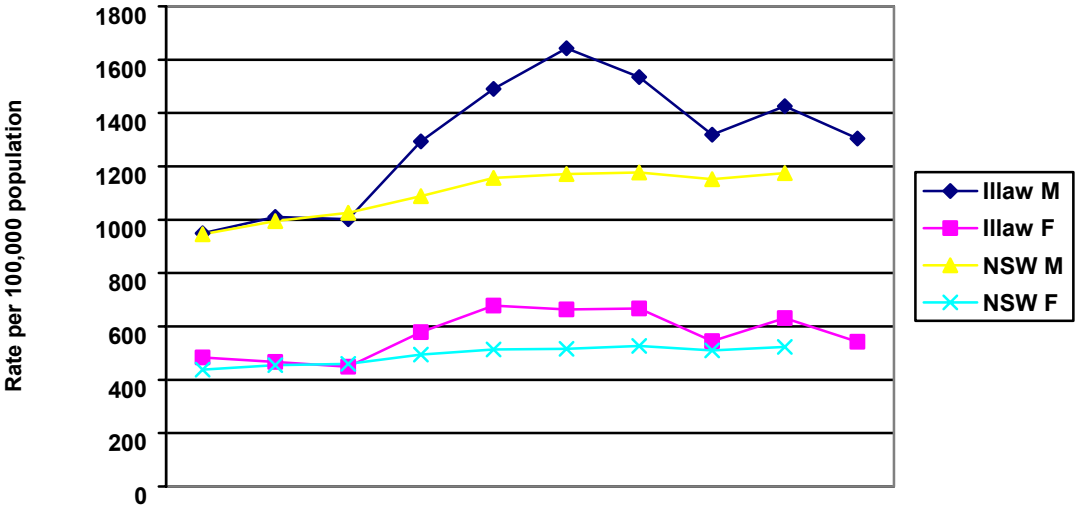
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Illaw M	312.9	302.7	255.1	257.8	231.1	235.9	252.8	235.7	214.2	205.7
Illaw F	151.7	149	152	140.8	128.3	118.9	125.2	131.8	122	110.1
NSW M	282	256.6	239.3	238.6	216.2	215.2	206.3	196.1	183	173.7
NSW F	151.9	141.7	134.9	132.1	120.2	121.1	114.7	107.7	105	96.1

FIGURE 10:
Trends in Directly Age-Standardised Mortality Rates for Coronary Heart Disease among Residents of the Illawarra Health Area and NSW[1], 25-74 Years, by Sex, 1989-1998



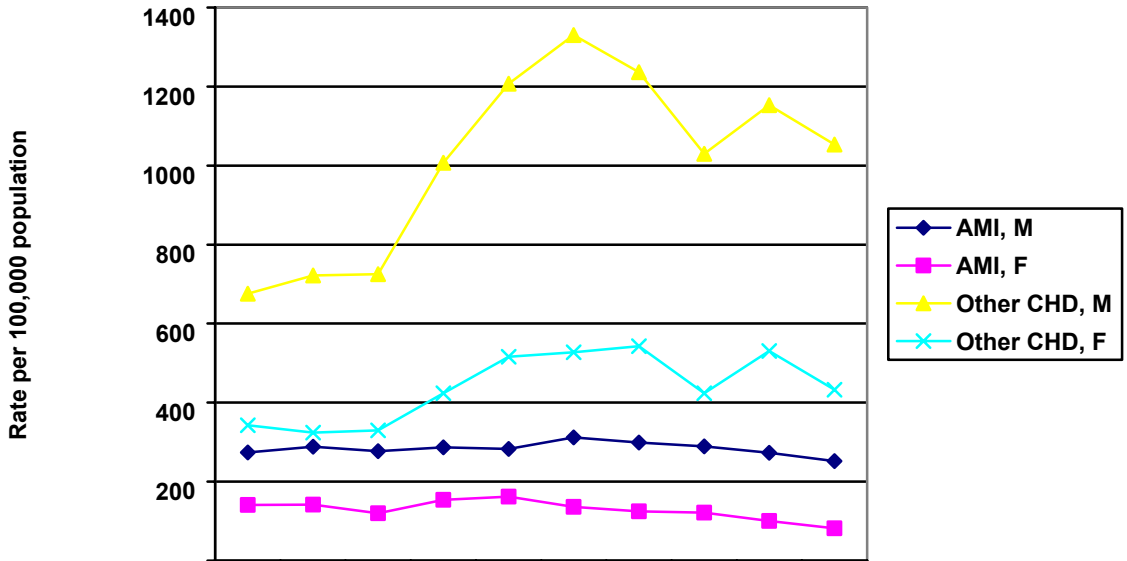
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Illaw M	253.7	221.3	217.1	194.3	196.1	177.2	181.8	172.2	165.3	154.1
Illaw F	96.4	91.7	79.9	77.3	68.8	62.7	65.7	81	69.6	55
NSW M	227.2	206.1	188.9	184.5	167.8	157.1	148.8	140.7	135	124.1
NSW F	87.1	84.3	74.2	71.3	65.1	59.5	58	50.3	51.9	44.9

FIGURE 11: Trends in Directly Age-Standardised Hospital Separation Rates for Coronary Heart Disease among Residents of the Illawarra Health Area and NSW[1], by Sex, 1989/90-1998/99



	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
Illaw M	949.5	1010.2	1002.6	1294	1490.3	1642.7	1534.9	1319.2	1426.2	1304.8
Illaw F	483.7	466.3	449.4	578	678.1	664	667.7	544.6	631	542.5
NSW M	945.7	995.3	1026.2	1088	1156.4	1171.4	1177	1151.7	1174.8	
NSW F	438.2	454.8	460	494.2	513.5	516.4	526.2	509.6	523.6	

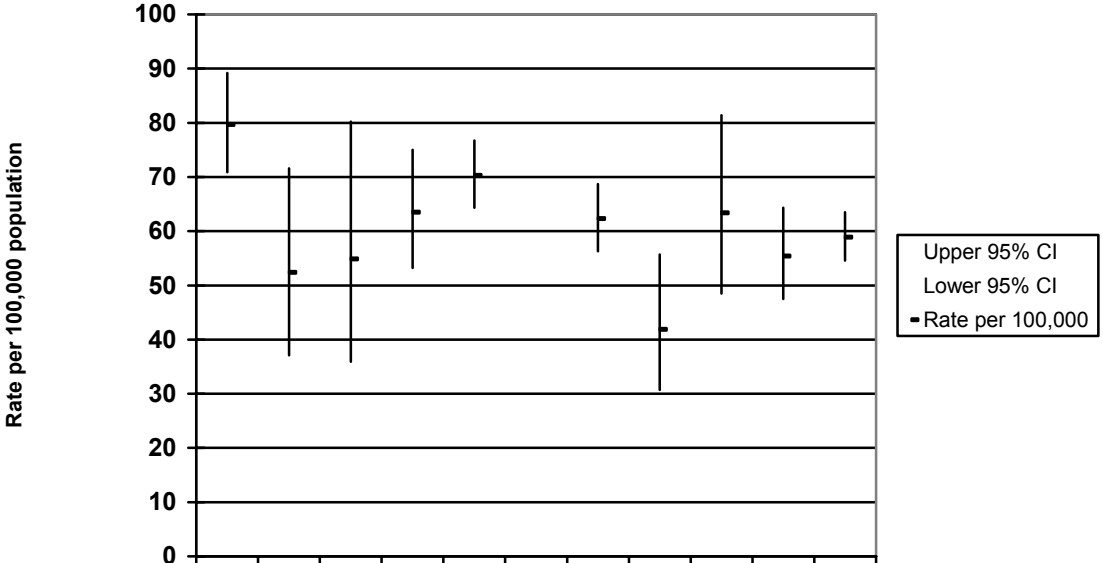
FIGURE 12: Trends in Directly Age-Standardised Hospital Separation Rates for Acute Myocardial Infarction and Other Coronary Heart Disease among Residents of the Illawarra Health Area, by Sex, 1989/90-1998/99



	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
AMI, M	273.7	288.4	277.3	286.9	283.1	312.1	298.9	289.3	273.1	251.9
AMI, F	141.1	141.9	120	154.1	162.4	136.5	124.7	121.2	100.2	82
Other CHD, M	675.8	721.8	725.3	1007.1	1207.2	1330.6	1236	1029.9	1153.1	1052.9
Other CHD, F	342.7	324.4	329.4	423.9	515.8	527.5	542.9	423.4	530.8	432.7

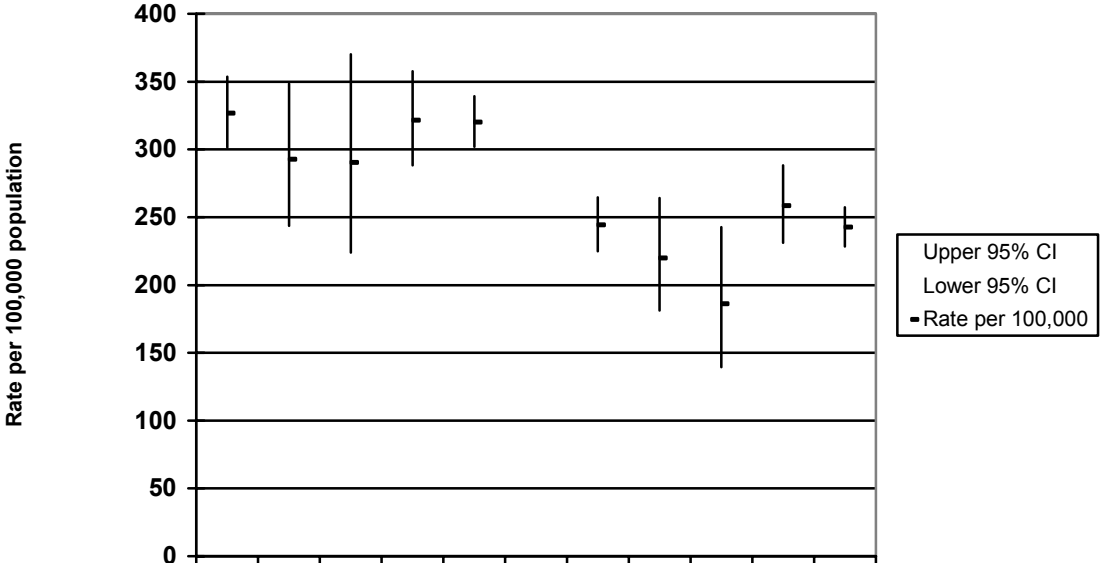
Notes: AMI ICD9 Code = 410; CHD ICD9 Code = 411-414

FIGURE 13: Directly Age-Standardised Stroke Mortality Rates among Residents of Illawarra Health Area, and Each of its Local Government Areas, all Ages, by Sex, 1994-1998



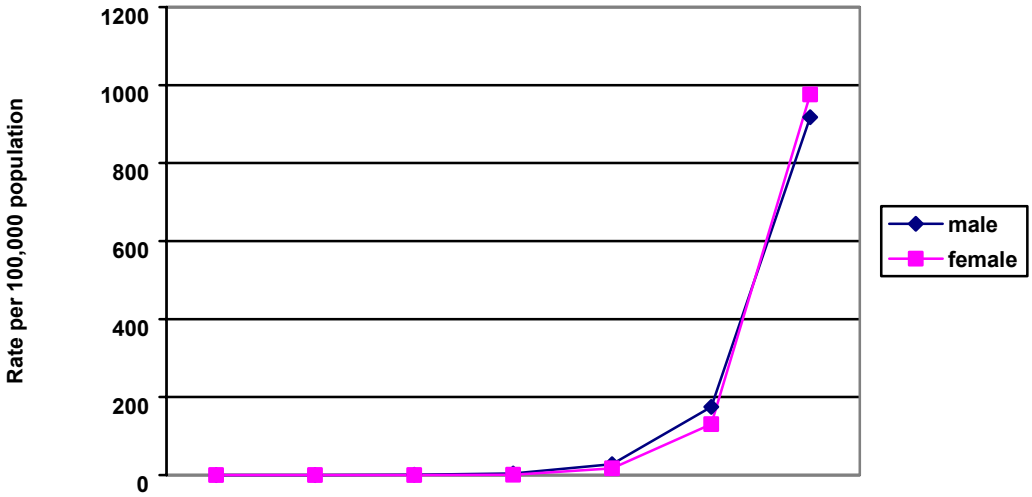
	Woll M	Shell M	Kiama M	Shoal M	Illaw M		Woll F	Shell F	Kiama F	Shoal F	Illaw F
Upper 95% CI	89.2	71.6	80.2	75.0	76.7		68.7	55.7	81.4	64.3	63.5
Lower 95% CI	70.9	37.1	35.9	53.2	64.3		56.3	30.7	48.5	47.5	54.6
Rate per 100,000	79.7	52.4	54.9	63.5	70.3		62.3	41.9	63.4	55.4	58.9

FIGURE 14: Directly Age-Standardised Stroke Hospital Separation Rates among Residents of Illawarra Health Area, and each of its Local Government Areas, by Sex, 1997/98-1998/99



	Woll M	Shell M	Kiama M	Shoal M	Illaw M		Woll F	Shell F	Kiama F	Shoal F	Illaw F
Upper 95% CI	353.8	348.6	370.2	357.7	339.2		264.7	264.2	242.7	288.2	257.4
Lower 95% CI	301.4	243.7	224.0	288.3	302.0		224.9	181.3	139.5	231.1	228.4
Rate per 100,000	326.8	292.8	290.5	321.7	320.2		244.2	219.9	186.2	258.5	242.6

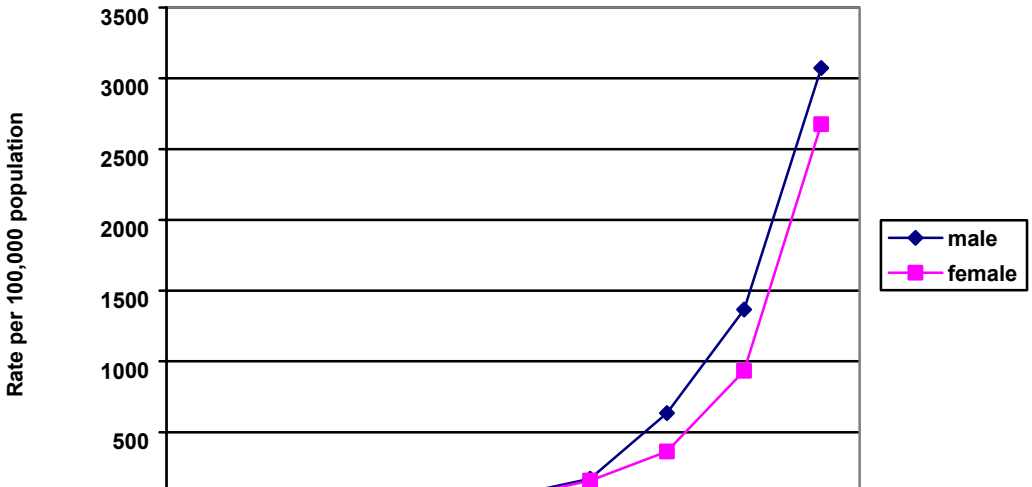
FIGURE 15:
Age-Specific Mortality Rates for Stroke among Residents of the Illawarra Health Area, by Sex, 1994-1998



	<5 yrs	5-14 yrs	15-24 yrs	25-44 yrs	45-64 yrs	65-74 yrs	75+ yrs
male	0	0	0.83	3.7	27.9	174.7	917.4
female	0	0	0	1.2	17.5	130.9	976.1

Age group

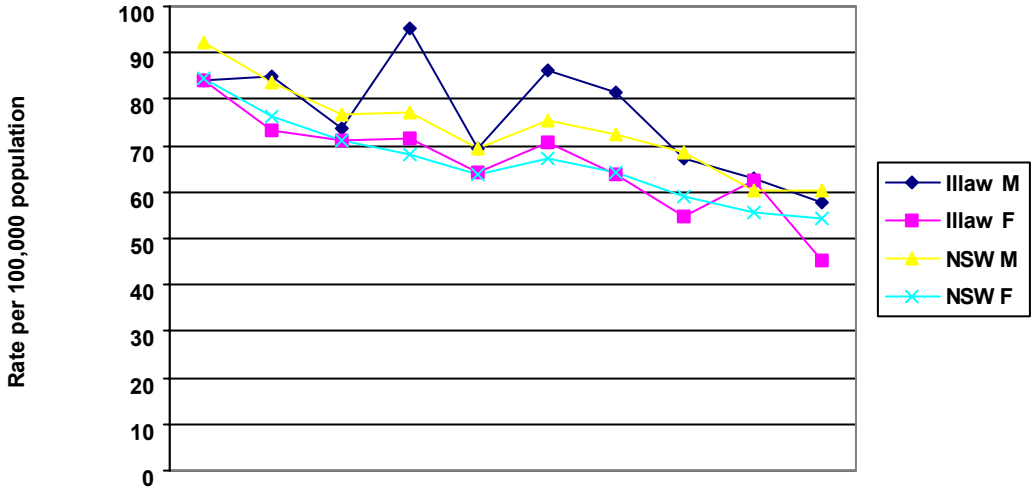
FIGURE 16:
Age-Specific Hospital Separation Rates for Stroke among Residents of the Illawarra Health Area, by Sex, 1997/98-1998/99



	<5 yrs	5-14 yrs	15-24 yrs	25-34 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	75+ yrs
male	4.2	0	6.3	33.9	53.4	171	634.9	1366	3073
female	17.5	2.1	6.7	34.5	41.1	158.9	364.3	933.1	2675.8

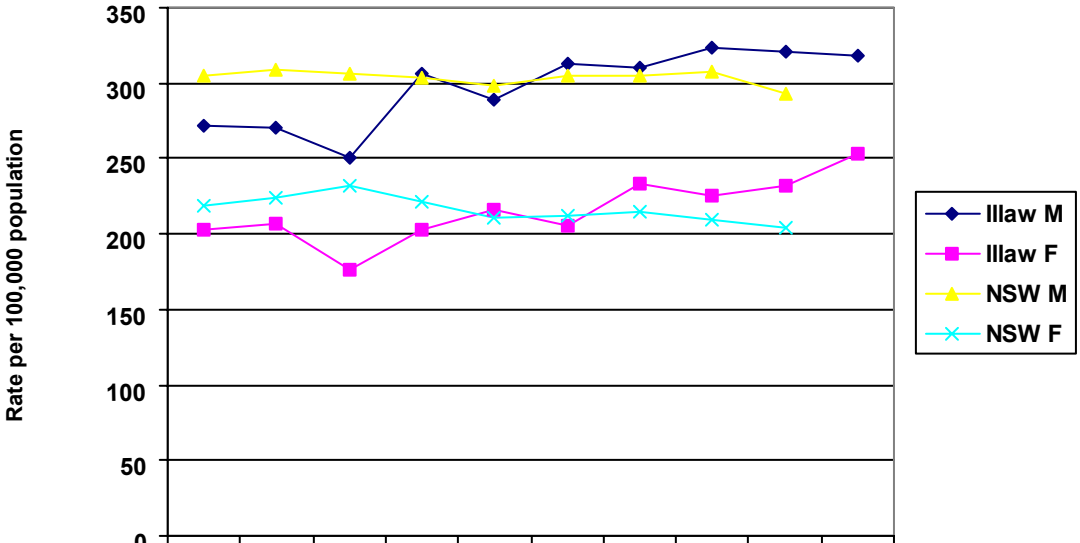
Age group

FIGURE 17:
Trends in Directly Age-Standardised Mortality Rates for Stroke among Residents of the Illawarra Health Area and NSW[1], by Sex, 1989-1998



	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Illaw M	84.2	84.7	73.7	95.2	69.2	86.4	81.3	67.3	62.9	57.7
Illaw F	84.1	73.3	71	71.7	64.4	70.6	63.7	54.9	62.3	45.2
NSW M	92.2	83.6	76.7	77.3	69.3	75.4	72.4	68.5	60.5	60.5
NSW F	84.6	76.4	71.1	68.3	63.9	67.4	64.4	59.1	55.8	54.3

FIGURE 18:
Trends in Directly Age-Standardised Hospital Separation Rates for Stroke among Residents of the Illawarra Health Area and NSW[1], by Sex, 1989/90-1998/99



	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99
Illaw M	272.4	270.5	251	306.6	288.8	312.7	310.6	323	320.6	318.6
Illaw F	203	206.7	176.3	203.4	216.6	205.5	233.2	225.7	232.2	253.3
NSW M	305.4	308.7	306.7	303.4	298	304.4	304.8	307.1	292.7	
NSW F	218.1	223.4	231.9	221.1	210.5	211.6	214.8	210.1	204.2	

FIGURE 19:
Cardiovascular Disease Risk Factors, by Sex, Persons Aged 16 Years and Older, Illawarra Health Area and NSW, 1997 and 1998[1]

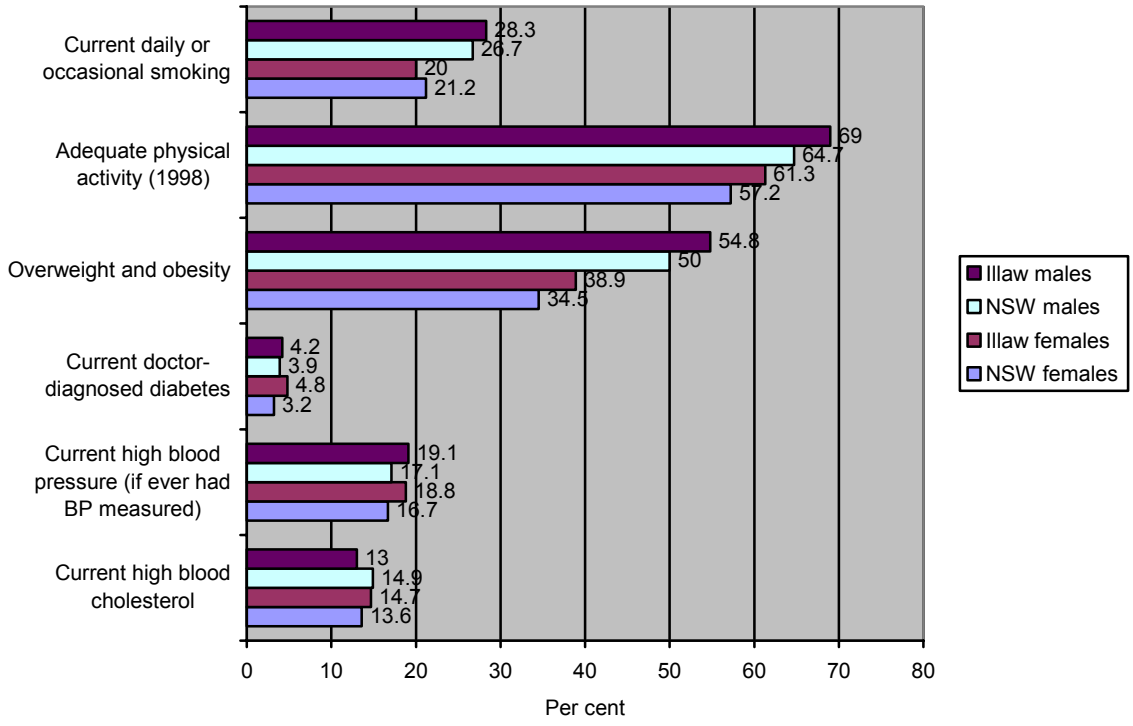


FIGURE 20:
Current Smoking Status, By Sex, Persons Aged 16 Years and Older, Illawarra Health Area and NSW, 1997 and 1998 [1]

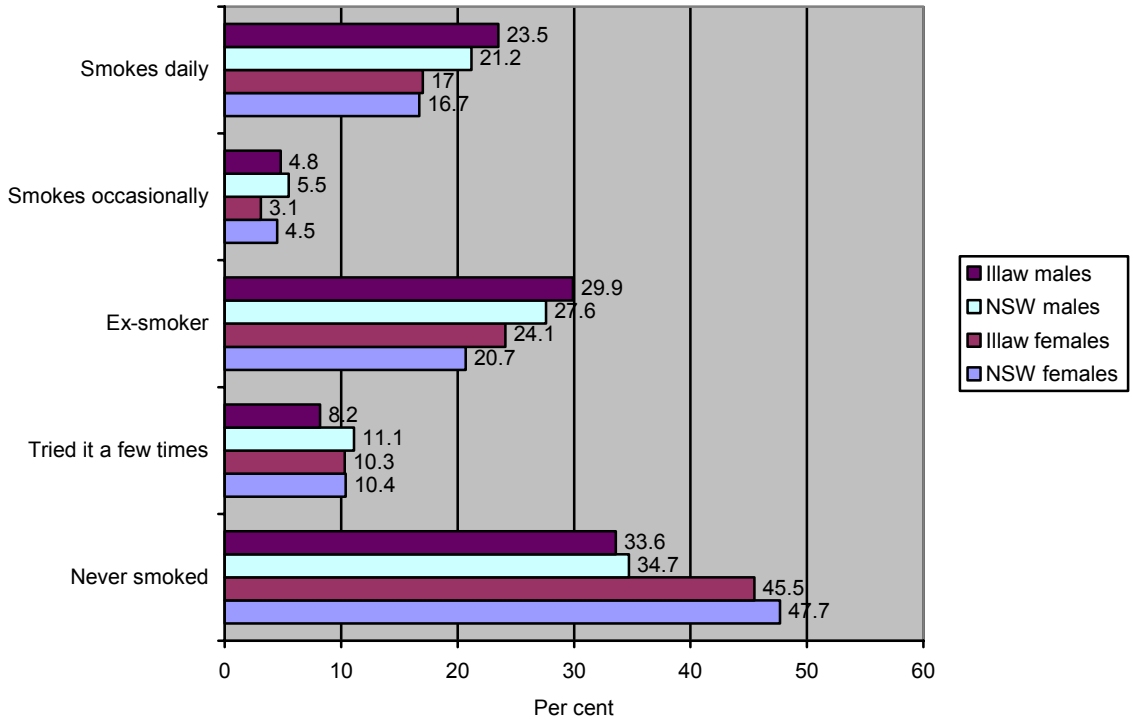
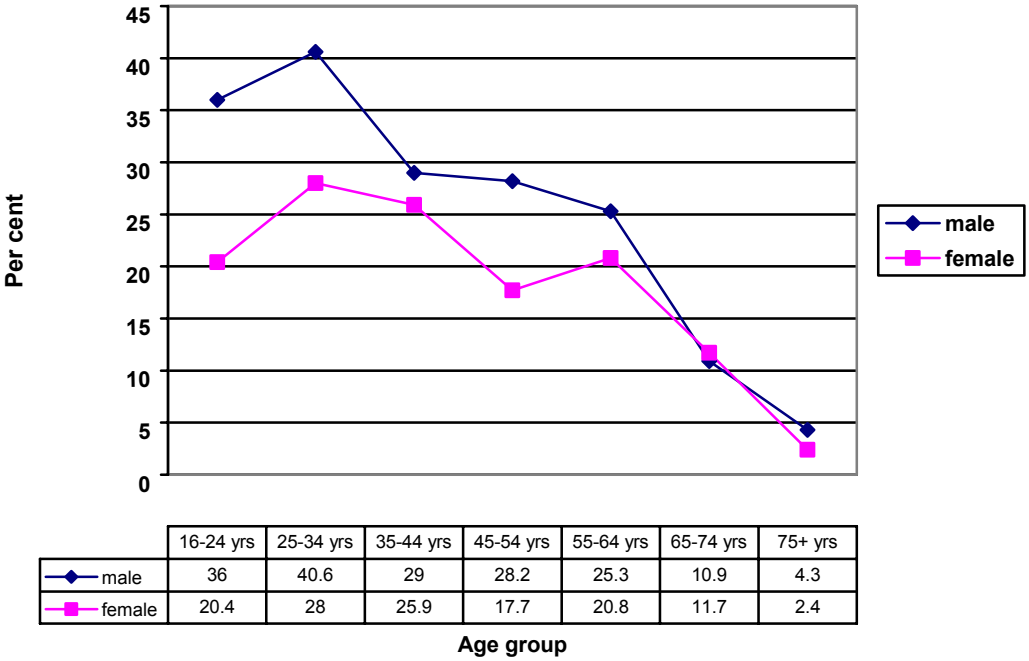


FIGURE 21:
Current Smoking (Daily or Occasional), Illawarra Residents Aged 16 Years and Older, by Age and Sex, 1997 and 1998 [1]



	16-24 yrs	25-34 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	75+ yrs
male	36	40.6	29	28.2	25.3	10.9	4.3
female	20.4	28	25.9	17.7	20.8	11.7	2.4

Age group

FIGURE 22:
Smoking Risk Factors, By Sex, Persons Aged 16 Years and Older, Illawarra Health Area and NSW, 1997 and 1998 [1]

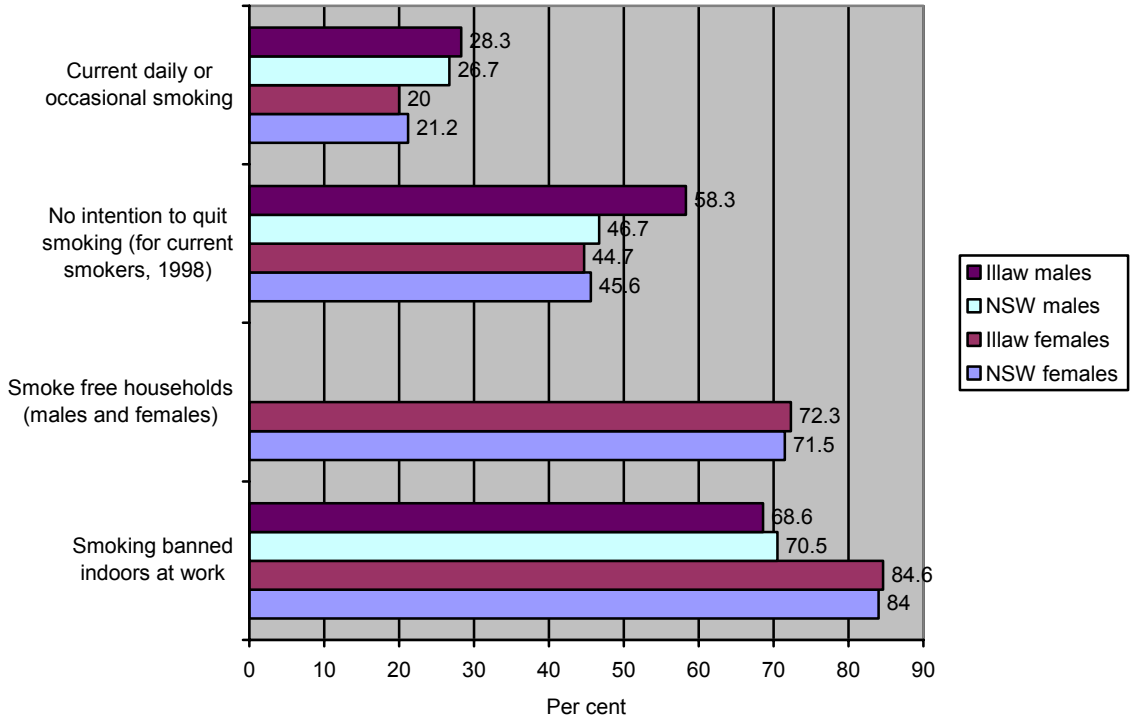
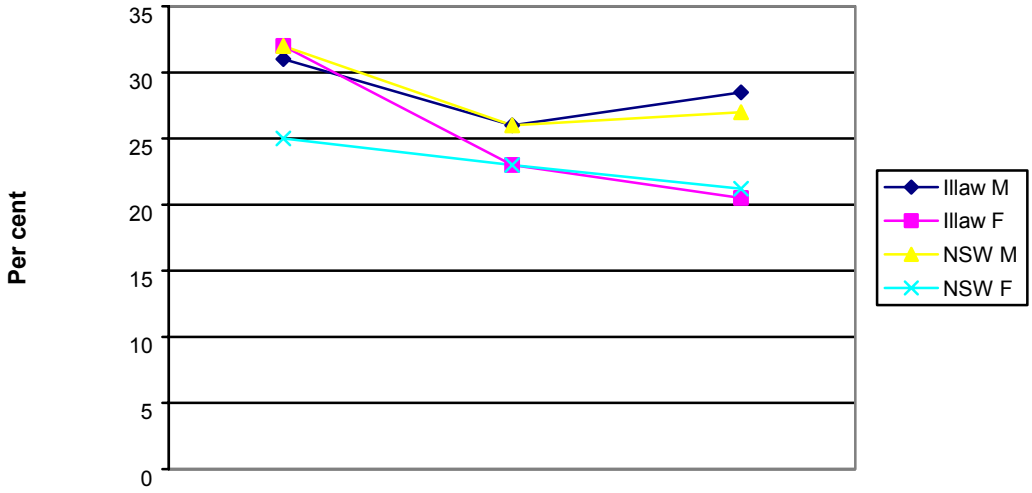


FIGURE 23:
Trends in Prevalence of Current Smoking among Residents of the Illawarra Health Area and NSW[5,6], 18 Years and Older, by Sex, 1989-1998



	1989/90	1994	1997-1998
Illaw M	31	26	28.5
Illaw F	32	23	20.5
NSW M	32	26	27
NSW F	25	23	21.2

FIGURE 24:
Prevalence of Smoking in Pregnancy Among Residents of the Illawarra Health Area, Each of its Local Government Areas (LGA), and Sub-Areas Within the Wollongong LGA, 1996-1999

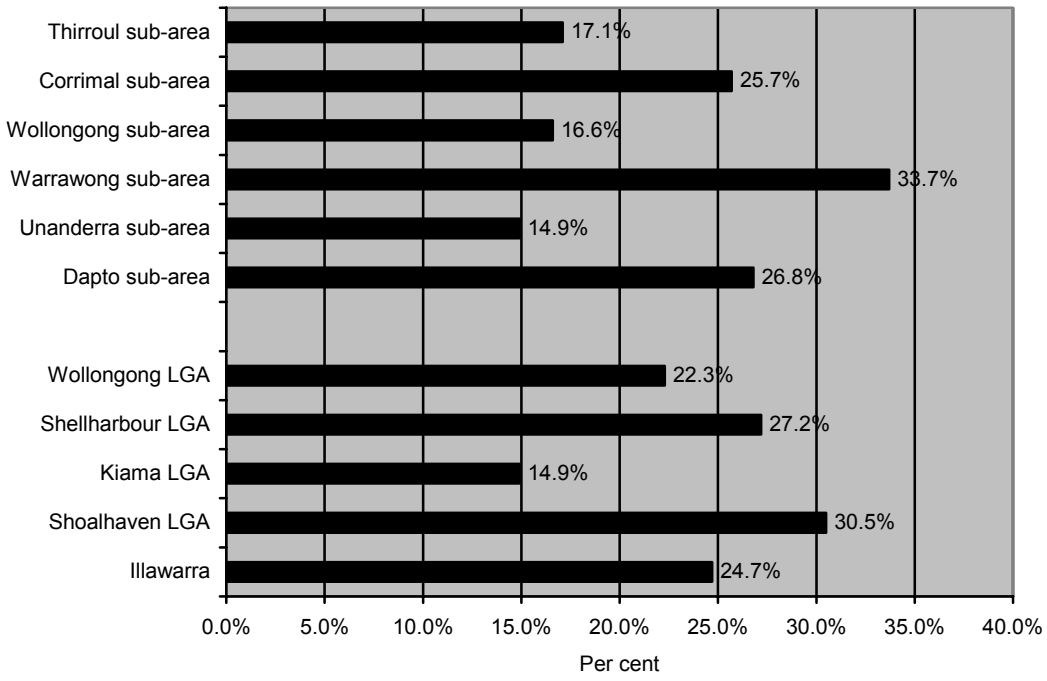
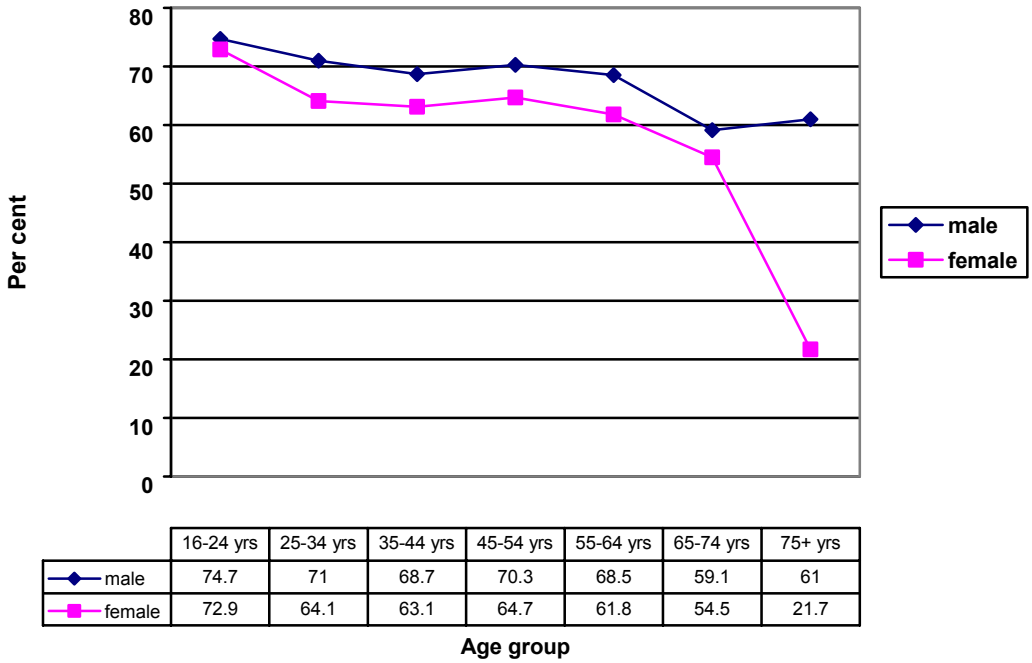


FIGURE 25: Adequate Physical Activity (Energy Expenditure), Illawarra Residents Aged 16 Years and Older, by Age and Sex, 1998 [1]



	16-24 yrs	25-34 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	75+ yrs
male	74.7	71	68.7	70.3	68.5	59.1	61
female	72.9	64.1	63.1	64.7	61.8	54.5	21.7

Age group

FIGURE 26: Consumption of Recommended Quantities of Selected Food Groups Daily, By Sex, Persons Aged 16 Years and Older, Illawarra Health Area and NSW, 1997 and 1998 [1]

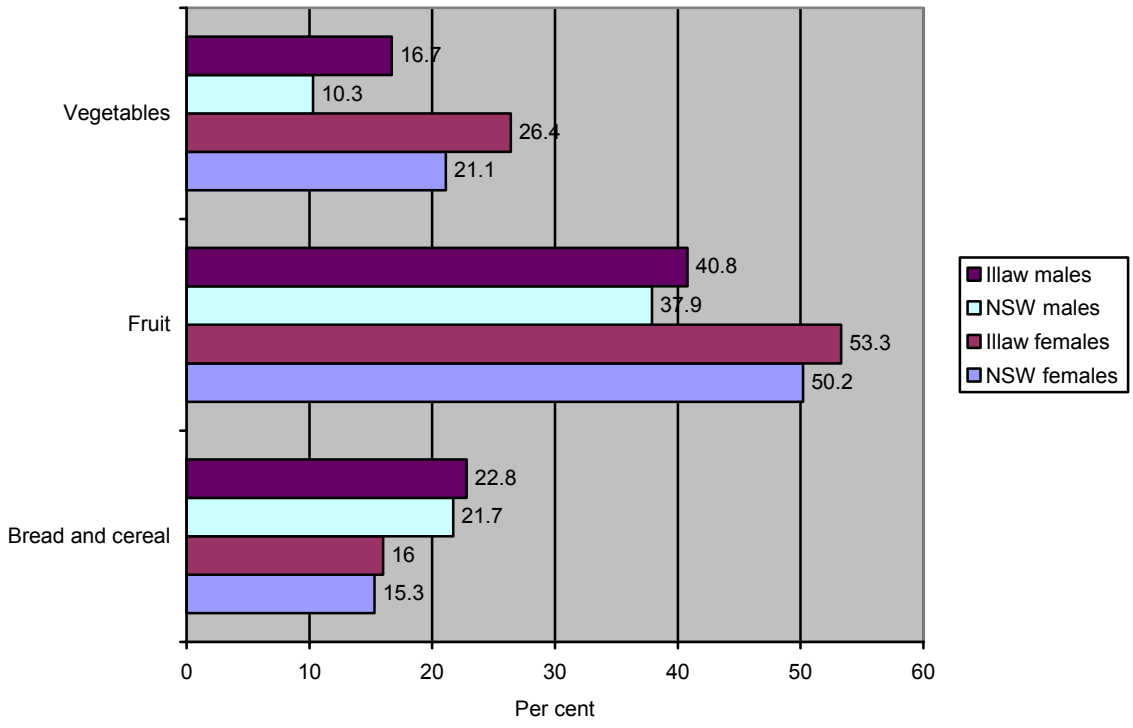


FIGURE 27:
Fat Consumption Indicators by Sex, Persons Aged 16 Years and Older, Illawarra Health Area and NSW, 1997 [1]

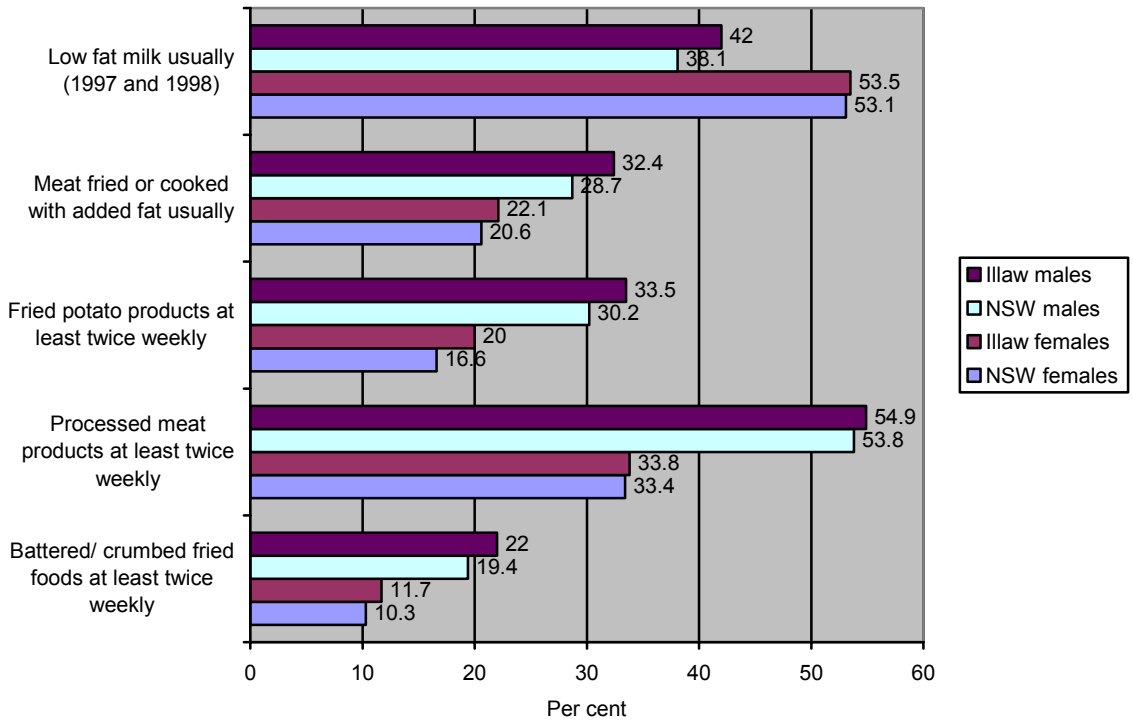
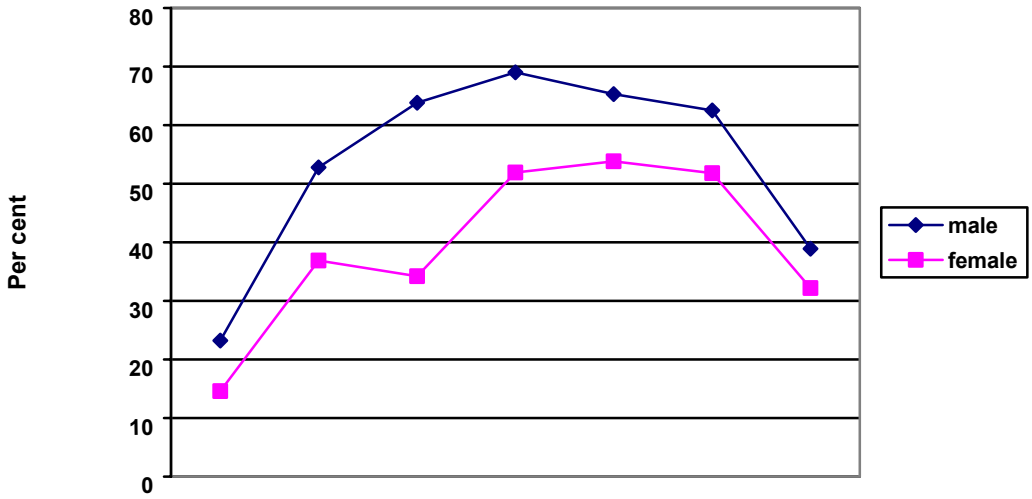


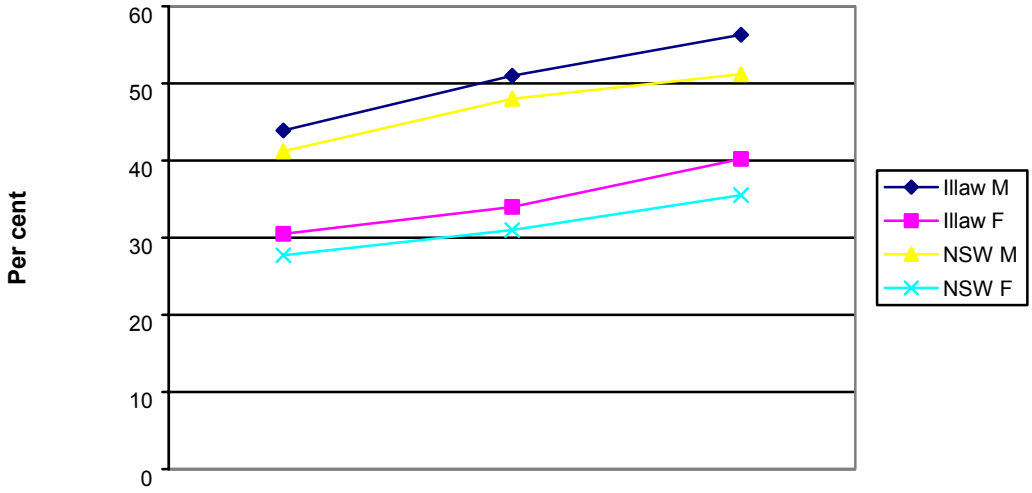
FIGURE 28:
Overweight and Obesity, Illawarra Residents Aged 16 Years and Older, by Age and Sex, 1997 and 1998 [1]



	16-24 yrs	25-34 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	75+ yrs
male	23.2	52.8	63.8	69	65.3	62.5	38.9
female	14.6	36.9	34.2	51.9	53.8	51.8	32.2

Age group

FIGURE 29:
Trends in Prevalence of Overweight or Obesity Among Residents of the Illawarra Health Area and NSW[5,6], 18 Years and Older, by Sex, 1989-1998



	1989/90	1994	1997-1998
Illaw M	43.9	51	56.3
Illaw F	30.5	34	40.2
NSW M	41.2	48	51.2
NSW F	27.7	31	35.5

FIGURE 30:
Blood Pressure and Cholesterol Screening, by Sex, Illawarra Health Area and NSW, 1997 and 1998 [1]

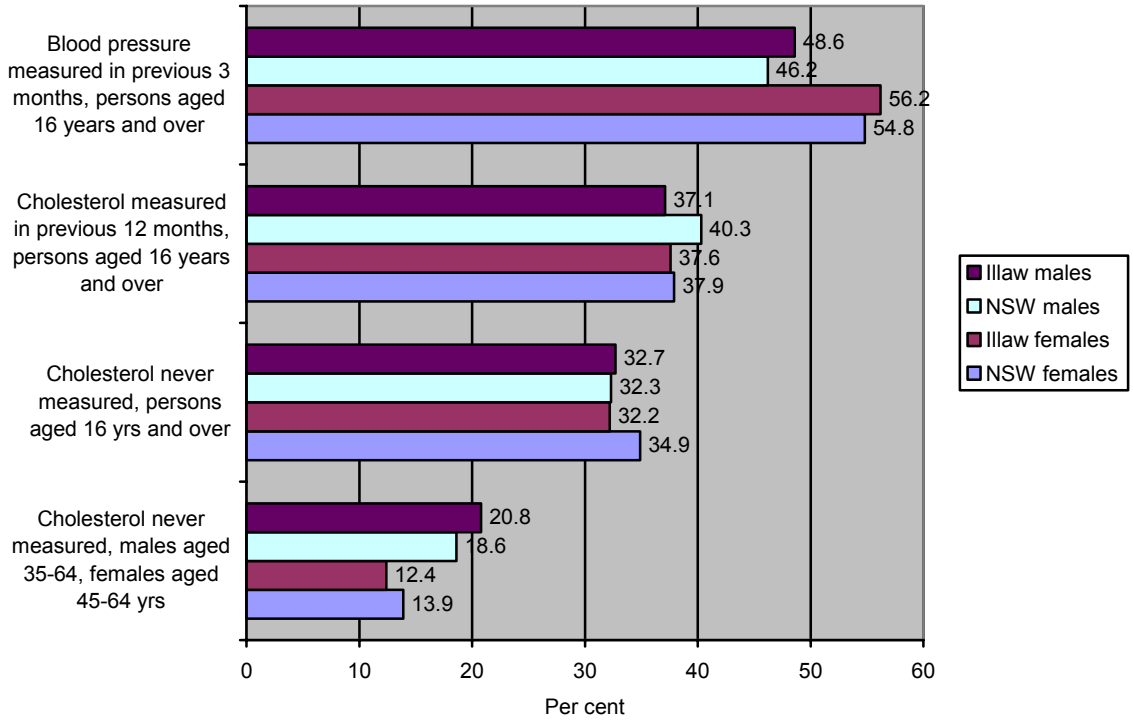
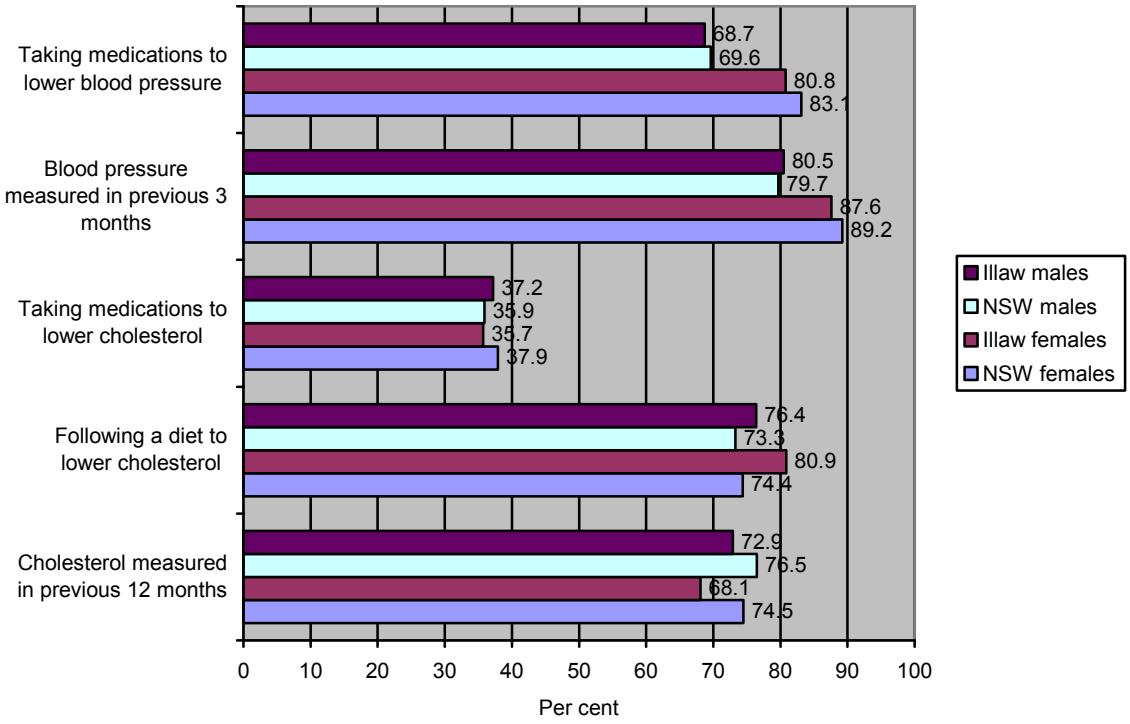


FIGURE 31:
High Blood Pressure and Cholesterol Management, Persons Aged 16 Years and Older with High Blood Pressure or Cholesterol (Respectively), by Sex, Illawarra Health Area and NSW, 1997 and 1998[1]



APPENDIX

TABLE A1:
Causes of Death Among Wollongong LGA Residents, 1994 – 1998

ICD9 CHAPTER HEADING (ICD9 codes)	MALES		FEMALES	
	Number	Per cent	Number	Per cent
CIRCULATORY (390-459)	1,557	43.2	1,448	47.6
NEOPLASM (140-239)	1,068	29.6	806	26.5
RESPIRATORY (460-519)	316	8.8	224	7.4
INJURY & POISONING (excl. medical misadventure etc) (E800-869, E880-929,E950-999)	226	6.3	97	3.2
DIGESTIVE (520-579)	92	2.6	90	3.0
ENDOCRINE, NUTRITIONAL, METABOLIC & IMMUNITY (240-279)	73	2.0	85	2.8
NERVOUS SYSTEM & SENSE ORGANS (320-389)	68	1.9	72	2.4
MENTAL DISORDERS (290-319)	77	2.1	50	1.6
INFECTION (001-139)	44	1.2	38	1.3
GENITOURINARY (580-629)	30	0.8	56	1.8
OTHER	55	1.5	73	2.4
TOTAL	3,606	100.0	3,039	100.0

Source ABS *Death Registrations* for 1994-1998 accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit*.

TABLE A2:
Causes of Hospitalisation Among Wollongong LGA Residents, 1997/98 – 1998/99

ICD9 CHAPTER HEADING (ICD9 codes)	MALES		FEMALES	
	Number	Per cent	Number	Per cent
DIGESTIVE (520-579)	6,804	12.6	7,278	12.2
CIRCULATORY (390-459)	5,358	9.9	3,915	6.5
INJURY & POISONING (800-999)	4,365	8.1	2,956	4.9
MUSCULOSKELETAL/ CONNECTIVE TISSUE (710-739)	3,416	6.3	3,134	5.2
NEOPLASM (140-239)	3,204	5.9	3,392	5.7
GENITOURINARY (580-629)	2,221	4.1	4,357	7.3
RESPIRATORY (460-519)	3,208	5.9	2,609	4.4
NERVOUS SYSTEM & SENSE ORGANS (320-389)	2,791	5.1	3,077	5.1
SYMPTOMS/ SIGNS/ ILL-DEFINED CONDITIONS (780-799)	2,732	5.0	2,500	4.2
MENTAL DISORDERS (290-319)	1,673	3.1	1,876	3.1
PERINATAL (760-779)	968	1.8	784	1.3
BLOOD & BLOOD-FORMING ORGANS (280-289)	899	1.7	707	1.2
SKIN/ SUBCUTANEOUS TISSUE (680-709)	759	1.4	685	1.1
ENDOCRINE, NUTRITIONAL, METABOLIC & IMMUNITY (240-280)	620	1.1	640	1.1
INFECTION (001-139)	606	1.1	559	0.9
CONGENITAL ANOMALIES (740-759)	425	0.8	373	0.6
PREGNANCY-RELATED (630-676)	-	-	7,394	12.4
SUPPLEMENTARY V CODES (V01-82)	14,159	26.1	13,542	22.7
TOTAL	54,208	100.0	59,778	100.0

Source: *NSW Inpatients Statistics Collection* for 1997/98 – 1998/99 accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

TABLE A3:
Causes of Death Among Shellharbour LGA Residents, 1994 –1998

ICD9 CHAPTER HEADING (ICD9 codes)	MALES		FEMALES	
	Number	Per cent	Number	Per cent
CIRCULATORY (390-459)	339	41.4	248	43.5
NEOPLASM (140-239)	269	329	166	29.1
RESPIRATORY (460-519)	55	6.7	53	9.3
INJURY & POISONING (excl. medical misadventure etc) (E800-869, E880-929,E950-999)	66	8.1	26	4.6
DIGESTIVE (520-579)	17	2.1	13	2.3
ENDOCRINE, NUTRITIONAL, METABOLIC & IMMUNITY (240-279)	18	2.2	17	3.0
NERVOUS SYSTEM & SENSE ORGANS (320-389)	19	2.3	13	2.3
MENTAL DISORDERS (290-319)	9	1.1	2	0.4
INFECTION (001-139)	6	0.7	4	0.7
GENITOURINARY (580-629)	8	1.0	15	2.6
OTHER	12	1.5	13	2.3
TOTAL	818	100.0	570	100.0

Source ABS *Death Registrations* for 1994-1998 accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

TABLE A4:
Causes of Hospitalisation Among Shellharbour LGA Residents, 1997/98 – 1998/99

ICD9 CHAPTER HEADING (ICD9 codes)	MALES		FEMALES	
	Number	Per cent	Number	Per cent
DIGESTIVE (520-579)	2,072	12.5	2,244	12.1
CIRCULATORY (390-459)	1,499	9.0	1,048	5.6
INJURY & POISONING (800-999)	1,582	9.5	901	4.8
GENITOURINARY (580-629)	660	4.0	1,473	7.9
MUSCULOSKELETAL/ CONNECTIVE TISSUE (710-739)	1,023	6.2	902	4.8
NEOPLASM (140-239)	906	5.4	928	5.0
RESPIRATORY (460-519)	985	5.9	803	4.3
SYMPTOMS/ SIGNS/ ILL-DEFINED CONDITIONS (780-799)	845	5.1	914	4.9
NERVOUS SYSTEM & SENSE ORGANS (320-389)	746	4.5	849	4.6
MENTAL DISORDERS (290-319)	364	2.2	412	2.2
PERINATAL (760-779)	317	1.9	224	1.2
BLOOD & BLOOD-FORMING ORGANS (280-289)	281	1.7	192	1.0
SKIN/ SUBCUTANEOUS TISSUE (680-709)	195	1.2	213	1.1
ENDOCRINE, NUTRITIONAL, METABOLIC & IMMUNITY (240-280)	122	0.7	281	1.5
INFECTION (001-139)	187	1.1	193	1.0
CONGENITAL ANOMALIES (740-759)	160	1.0	154	0.8
PREGNANCY-RELATED (630-676)	-	-	2,667	14.3
SUPPLEMENTARY V CODES (V01-82)	4,681	28.2	4,298	23.1
TOTAL	16,625	100.0	18,618	100.0

Source: *NSW Inpatients Statistics Collection* for 1997/98 – 1998/99 accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

TABLE A5:
Causes of Death Among Kiama LGA Residents, 1994 –1998

ICD9 CHAPTER HEADING (ICD9 codes)	MALES		FEMALES	
	Number	Per cent	Number	Per cent
CIRCULATORY (390-459)	147	38.1	202	50.6
NEOPLASM (140-239)	131	33.9	98	24.6
RESPIRATORY (460-519)	28	7.3	27	6.8
INJURY & POISONING (excl. medical misadventure etc) (E800-869, E880-929,E950-999)	26	6.7	10	2.5
DIGESTIVE (520-579)	10	2.6	11	2.7
ENDOCRINE, NUTRITIONAL, METABOLIC & IMMUNITY (240-279)	6	1.6	5	1.3
NERVOUS SYSTEM & SENSE ORGANS (320-389)	15	3.9	12	3.0
MENTAL DISORDERS (290-319)	6	1.6	12	3.0
INFECTION (001-139)	6	1.6	2	0.5
GENITOURINARY (580-629)	7	1.8	7	1.8
OTHER	4	1.0	13	3.3
TOTAL	386	100.0	399	100.0

Source ABS *Death Registrations* for 1994-1998 accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

TABLE A6:
Causes of Hospitalisation Among Kiama LGA Residents, 1997/98 – 1998/99

ICD9 CHAPTER HEADING (ICD9 codes)	MALES		FEMALES	
	Number	Per cent	Number	Per cent
DIGESTIVE (520-579)	851	14.7	891	14.4
CIRCULATORY (390-459)	604	10.4	486	7.9
NEOPLASM (140-239)	451	7.8	524	8.5
INJURY & POISONING (800-999)	539	9.3	401	6.5
MUSCULOSKELETAL/ CONNECTIVE TISSUE (710-739)	374	6.5	411	6.6
NERVOUS SYSTEM & SENSE ORGANS (320-389)	307	5.3	365	5.9
GENITOURINARY (580-629)	227	3.9	418	6.8
SYMPTOMS/ SIGNS/ ILL-DEFINED CONDITIONS (780-799)	324	5.6	274	4.4
RESPIRATORY (460-519)	292	5.0	208	3.4
MENTAL DISORDERS (290-319)	120	2.1	105	1.7
SKIN/ SUBCUTANEOUS TISSUE (680-709)	74	1.3	95	1.5
ENDOCRINE, NUTRITIONAL, METABOLIC & IMMUNITY (240-280)	83	1.4	71	1.1
PERINATAL (760-779)	69	1.2	59	1.0
BLOOD & BLOOD-FORMING ORGANS (280-289)	69	1.2	55	0.9
INFECTION (001-139)	57	1.0	61	1.0
CONGENITAL ANOMALIES (740-759)	23	0.4	37	0.6
PREGNANCY-RELATED (630-676)	-	-	622	10.1
SUPPLEMENTARY V CODES (V01-82)	1,331	1,331	1,106	17.9
TOTAL	5,795	100.0	6,189	100.0

Source: NSW *Inpatients Statistics Collection* for 1997/98 – 1998/99 accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

TABLE A7:
Causes of Death Among Shoalhaven LGA Residents, 1994 –1998

ICD9 CHAPTER HEADING (ICD9 codes)	MALES		FEMALES	
	Number	Per cent	Number	Per cent
CIRCULATORY (390-459)	846	42.3	681	46.3
NEOPLASM (140-239)	611	30.6	392	26.7
RESPIRATORY (460-519)	182	9.1	135	9.2
INJURY & POISONING (excl. medical misadventure etc) (E800-869, E880-929,E950-999)	102	5.1	44	3.0
DIGESTIVE (520-579)	69	3.5	53	3.6
ENDOCRINE, NUTRITIONAL, METABOLIC & IMMUNITY (240-279)	48	2.4	28	1.9
NERVOUS SYSTEM & SENSE ORGANS (320-389)	36	1.8	35	2.4
MENTAL DISORDERS (290-319)	25	1.3	27	1.8
INFECTION (001-139)	25	1.3	7	0.5
GENITOURINARY (580-629)	25	1.3	35	2.4
OTHER	30	1.5		2.2
TOTAL	1,999	100.0	1,470	100.0

Source ABS *Death Registrations* for 1994-1998 accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

TABLE A8:
Causes of Hospitalisation Among Shoalhaven LGA Residents, 1997/98 –1998/99

ICD9 CHAPTER HEADING (ICD9 codes)	MALES		FEMALES	
	Number	Per cent	Number	Per cent
DIGESTIVE (520-579)	3,025	11.7	2,994	10.6
CIRCULATORY (390-459)	3,340	12.9	2,377	8.4
INJURY & POISONING (800-999)	1,582	6.1	901	3.2
MUSCULOSKELETAL/ CONNECTIVE TISSUE (710-739)	1,023	3.9	902	3.2
GENITOURINARY (580-629)	660	2.5	1,473	5.2
NEOPLASM (140-239)	906	3.5	928	3.3
RESPIRATORY (460-519)	985	3.8	803	2.8
SYMPTOMS/ SIGNS/ ILL-DEFINED CONDITIONS (780-799)	845	3.3	914	3.2
NERVOUS SYSTEM & SENSE ORGANS (320-389)	746	2.9	849	3.0
MENTAL DISORDERS (290-319)	364	1.4	412	1.5
PERINATAL (760-779)	317	1.2	224	0.8
BLOOD & BLOOD-FORMING ORGANS (280-289)	281	1.1	192	0.7
SKIN/ SUBCUTANEOUS TISSUE (680-709)	195	0.8	213	0.8
INFECTION (001-139)	187	0.7	193	0.7
CONGENITAL ANOMALIES (740-759)	160	0.6	154	0.5
ENDOCRINE, NUTRITIONAL, METABOLIC & IMMUNITY (240-280)	122	0.5	203	0.7
PREGNANCY-RELATED (630-676)	-	-	2,667	9.5
SUPPLEMENTARY V CODES (V01-82)	4,681	18.1	4,298	15.3
TOTAL	25,930	100.0	28,183	100.0

Source: *NSW Inpatients Statistics Collection* for 1997/98 – 1998/99 accessed from NSW Health's *Health Outcomes Information and Statistical Toolkit.*

REFERENCES

1. Public Health Division. *Report on the 1997 and 1998 NSW Health Surveys*. NSW Health Department, Sydney, 2001. Available at http:// www.health.nsw.gov.au/public-health/nswhs. Accessed 3 July 2001.
2. Public Health Division. *The health of the people of New South Wales – Report of the Chief Health Officer, 2000*. NSW Health Department, Sydney, 2000. Available at http:// www.health.nsw.gov.au/public-health/chorep
3. McLellan L, Westley-Wise V, Hogan A, Bauman A, et al. *Illawarra Youth Health Survey 1996*. Illawarra Area Health Service, Wollongong, 1998.
4. Health Services Research Group. *Phase I Quality Indicators: Illawarra Area Health Service*. University of Newcastle, May 2001.
5. Mathers C, Vos T, Stevenson C. *The burden of disease and injury in Australia*. Australian Institute of Health and Welfare, Canberra, 1999.
6. Howell S, Bauman A. *NSW Health Promotion Survey 1994: Databook*. National Centre for Health Promotion/ NSW Health, Sydney, 1995.
7. Boyle K, Dobson A. *Cardiovascular Disease Risk Factors in New South Wales: Analysis of the 1989-90 National Health Survey*. Hunter Region Heart Disease Prevention Program, University of Newcastle, 1992.

Report prepared by Dr Victoria Westley-Wise and Sarah Thackway

Comments, questions, and suggestions are welcome:
Sarah Thackway, Director Public Health or
Victoria Westley-Wise, Medical Epidemiologist or

Division of Population Health and Planning
Locked Bag 9, Unanderra Delivery Centre NSW 2526
Email: thackways@iahs.nsw.gov.au or
westleywisev@iahs.nsw.gov.au

Phone: (02) 4275 4600 Fax: (02) 4275 4611